

DELIVERABLE SUBMISSION SHEET

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 Relevant descriptive documents are attached.

The deliverable is:

- a document
- a Website (URL:)
- software (.....)
- an event
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D8.1 Requirements gathering, use case design and interface mock-ups V2

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Abstract

FP7-ICT Strategic Targeted Research Project PHEME (No. 611233)

Deliverable D8.1 (WP 8)

The goal of D8.1 was to develop a set of scenarios for WP8 (journalistic use case), derive requirements for a use case application of the PHEME project and to draft a related set of mock-ups. This document is an updated version of the original D8.1 document and describes the method and results arising from both the original document and from additional fieldwork in the form of ethnographic observations that was conducted in summer 2014. It contains also the resulting mock-ups. The aim of this document is to enable the fast development of a working prototype as required in WP8.

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Executive Summary

Task 8.1 consisted of defining the relevant set of use cases, gathering requirements for a journalistic application of the PHEME Project and drafting a set of interface mock-ups. The original Report for Deliverable 8.1 was submitted on 7 May 2014.

In order to better understand journalistic workflows and requirements and ultimately to be able to achieve more adequate results, in the course of the work for WP8 it became evident that the process of requirement gathering should be perceived as part of the iterative prototype development process rather than a onetime analysis. Additional fieldwork in the form of ethnographic observations was therefore conducted during summer 2014. The insights gained in this process fed into a new and more precise set of mock-ups. This document adds the results of the ethnographic observations at SWI swissinfo.ch to the original requirements document and describes the new set of mock-ups for the PHEME journalistic application, that will be developed in T8.3.

The defined use case scenarios were «geographic analysis of messages around a localized event», «Analysis of a specific rumour» and «Topic-based analysis of a massive amount of live messages around a non-localized news event».

The applied methodology steps to systematically gather requirements for the journalistic PHEME application were twofold: 1) a profound literature review, and 2) detailed ethnographic observations of actual journalistic practice. The observations were conducted at SWI swissinfo.ch over the course of one week in late April 2014 and delivered a deeper understanding of the work processes applied by journalists on rumours.

The interface mock-ups were subsequently developed in an iterative process, starting with the requirements found in the literature and incorporating the insights generated from the ethnographic observations. The main focus at this stage was on the core requirements in order to quickly get a working prototype.

The resulting interface mock-ups reflect the core functionalities of PHEME adapted to the existing two speed newsroom in modern news outlets. They allow journalists to quickly gather an overview across current and relevant rumours and to go more into detail where necessary. They combine available information for a given topic in the detail view and provide necessary collaboration functionality as well as the possibility to keep track of rumours without the need to have the tool in view at all times (via an alert system).

Further ethnographical research will be conducted according to the ongoing need to examine more specific features of journalistic practice over the course of the continuing iterative development.

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1 Introduction

The development and constant evolution of the World Wide Web keeps offering journalists and news organisations new sources of content. While better search engines helped tremendously in finding relevant content, Social Media later appeared as a « magical » tool to point to what mattered, even if it got published in the dark corners of the internet. Social Media quickly took on a life of its own, not merely pointing to content but also creating content of importance in its own right and shaping the discussion around it. From a solution to better sort information and quickly get confirmation and expertise, Social Media turned into a major provider of data, a voluminous new source to take into account. In a world where more and more content becomes available, it has become virtually impossible for humans to process this vast stream of information. For journalists to do their work, solutions like PHEME are needed to support the newsrooms in navigating the content and quickly identifying what matters. They become virtual assistants replacing tedious parts of journalistic work needed to assess the importance or the credibility of content. While robots may never be able to identify that an emitter has been hacked, or to call the adequate office for confirmation, they can definitely help in processing large amounts of data.

In the Digital Journalism Use Case, PHEME is aiming specifically at helping the newsroom identify rumours spreading on Social Media, using the USHAHIDI platform to help with organizing and visualizing the relevant information. The tool will be able to track a large number of twitter sources linked by geographical position and/or common topics and give insights into the provenance of crowd sourced information. This will provide the journalist with a view of what may or may not constitute a legitimate and relevant piece of information, and to understand how rumours develop.

Asserting credibility and curating relevant information is at the core of a journalist's work. PHEME will increase substantially his or her productivity in everyday work.

2 Intended Audience

This document details internal procedures to ensure the project is being governed according to plan and meeting its own targets. With respect to self-assessment, internal procedures have been put in place to ensure that deliverables are peer reviewed and verified.

As such, this document is intended for all actors involved in the PHEME project.

3 Work Package 8 Overview

Task 8.1 Requirements gathering, use case design and interface mock-ups

D8.1 Requirements gathering, use case design and interface mock-ups

Duration: January 2014 – December 2014 (prolonged due to adapted methodology)

Task 8.2 Journalism Corpus Collection and Annotation

Duration: January 2014 – June 2015

Task 8.3 Open-source digital journalism showcase

Duration January 2014 – December 2016

Task 8.4 Iterative Evaluation

Duration August 2014 – December 2016

3.1 WP8.1 Deliverables: Use Case Design Document, Requirements and Interface Mock-ups

The approaches adopted to investigate how journalists go about doing their daily work and what their requirements are were twofold and consisted of 1) a profound literature review and 2) ethnographic observations. The latter involved short preliminary interviews with key individuals to identify appropriate targets for specific observations, detailed observation of the news room in action, followed by more structured interviews in order to drill down into the exact characteristics of significant and relevant features of the work that the observations had identified.

Data gathered during the ethnographic work was written up and anonymised prior to careful explication of the work's salient organisational characteristics. These organisational characteristics were translated into use case scenarios that reflect the real world accomplishment of the work.

Data was gathered in the form of field notes and, where appropriate and permitted, audio-video recordings and/or photographs. All of the ethnographic data gathered is stored in accordance with the UK Data Protection Act 1998, on a password protected drive in a secure facility and only for the duration for which it is required. It is only directly accessible by the ethnographer who has collected the data and anonymisation took place prior to any of the data being shared with other members of the project.

3.1.1 Use Case Scenarios

The content of this task is to develop possible **use case scenarios** for the PHEME rumour detection and veracity assessment tool. The use case scenarios were also based on the ethnographic observations.

3.1.2 Requirements Gathering and Interface Mock-up

Establishing the requirements of newsroom journalists consists of looking into what (and how) journalists are doing things in their daily work (e.g. discovering potential stories (focusing on rumours), checking up on facts, etc.). Taking this information as a basis, requirements can be extracted by looking into means and goal oriented behaviour and assessing where and how the PHEME solution might support or even completely replace certain work steps which are now being done «manually». This requires not only a deep understanding of immediately observable processes, but also of taken for granted processes and the assumptions being made by subjects, and how this exhibits the reasoning in play. Furthermore, new insights and understandings might be needed throughout the (iterative) development of the prototype. Accordingly, the requirements gathering should be understood as part of the development process (cf. 4 Method and Results). To establish the basis for this process, work contents were analysed in as detailed a way as possible. The approach followed was based on ethnographic principles:

1. Literature analysis with focus on task centred social work analysis in order to benefit from existing work. In the course of this analysis however, it became quickly clear that a deeper understanding of journalistic work processes was needed in order to better understand how and which processes in everyday journalistic work could be supported by the PHEME software. It was therefore decided that subsequent ethnographical field observations should be carried out.
2. Observations, i.e. watching and recording in detail the ordinary everyday work practices of journalists in order to uncover the exact methods required to accomplish their work and the kinds of reasoning underlying that accomplishment. To diversify the insights into journalistic work practices, target subjects included journalists with different core tasks.
3. Subsequent to these observations, more structured interviews were conducted in order to drill down into the exact characteristics of significant and relevant features of the work that the observations had identified. The structure of these interviews included how rumours are detected and judged in respect to their credibility, how they are incorporated into articles, and where tools or software functions are supporting these processes.
4. Analysis of data from literature, observations and interviews to get lists of different tasks, processes, information and collaboration needs.
5. Draft **mock-ups of interfaces** from requirements to capture salient features of the work.

4 Method and Results from Literature Review

An important part of the work in PHEME is to establish and develop the relevance of the research as a whole (and associated aspects of design) to particular application domains where the passage of rumours and associated concerns with veracity assessment are especially important. The two identified application domains within the project are healthcare and journalism. Work Package 8 is focused upon the journalistic domain.

D8.1 Requirements gathering, use case design and interface mock-ups

Initial work in Work Package 8 was formulated around a loose pipeline that is open to iterative development over the course of the research being undertaken. Central to the Work Package is a foundational concern with providing tools that can simultaneously deliver the insights growing out of the research being undertaken in other Work Packages whilst ensuring that these tools are scoped as well as possible for their use within the proposed application domain. The loose pipeline is therefore organised around: detailed engagement with the real world practices of journalism in order to identify how those practices are organized, the tools and reasoning they depend upon, and the concomitant requirements arising from those practices that can be specified; extraction from this overall body of requirements of the requirements most particularly aligned with the objectives of PHEME and its design objectives and further refinement of these requirements through deeper investigation of journalistic practice in dedicated interviews; articulation of the identified requirements through a series of use case scenarios in order to aid their transmission to design; the iterative development of prototypes that integrate both these requirements and the other elements being developed within PHEME; and the evaluation of those prototypes.

The pipeline is described as being loose because it is anticipated that the requirements gathering and testing processes will go through a number of iterations. The means to achieve this is through proven and established instruments of social and work analysis. At the centre of these instruments are ethnographic observations, conducted by an experienced ethnographer who is used to articulating findings for a diverse audience of practitioners and designers.

4.1 Use Case Scenarios

The use of Social Media monitoring as a provider of unverified content occurs in very different contexts. Analysis from swissinfo.ch proposes to look into 3 types of journalistic scenarios which lend themselves to intensive Social Media fact-checking:

- Geographic analysis of messages around a localized event. This covers the full spectrum of unexpected events (natural disaster) to expected events (vote), including local events that are newsworthy or become newsworthy because of their scope (protests). The common element is the location of the event, not limited to a topic in the hope of finding new bits of relevant information. The more unexpected an event, the more disorganised the discourse (no hashtag in place, no common vocabulary, etc.), which explains the importance of looking at everything that is being said in a defined location. One of the most important source of information in this case is a map of a defined region, in order to help the journalist identify where the action is taking place and where potentially interesting reports are coming from, and an assessment of their veracity to quickly sort out relevant information.
- Analysis of a specific rumour. This covers the analysis of a specific bit of information and the way it was shaped in Social Media. Starting with a specific bit of Social Media content, this allows the journalists to analyse each and every iteration of the message, identify the influencers that helped convey or modify the message, get back to all non-

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Social Media sources that are quoted in the context of the message, the crowd reaction to that message and evolution of topics when new information becomes available.

- Topic-based analysis of a massive amount of live messages around a non-localized news event. The geographic zone might also be too big, or the news not big enough to represent most of that region's Social Media chatter. This covers the live comments that stack up during news coverage and may or may not be true statements. The goal is to allow the journalists to quickly sift through the incoming messages with the possibility of assessing more quickly the truthfulness of a statement ("The party had the exact same score in 1967, drop it!") or correct it if it gains popularity and needs to be invalidated.

The analysis suggests that all other cases discussed so far can be dealt with within these scenarios. The ideal solution has all three scenarios in a single package, allowing the display, classification and analysis of information in the same way independent of a specific type of event.

| Cases | Scenario |
|---|--|
| Haïti Earthquake, Ukraine crisis, Syria's war, Arab Spring uprisings in specific cities, London Riots, Boston Marathon, Afghan election, etc. | Geographic analysis of messages around a localized event. |
| ET702 hijacked, Bin Laden raid, London Eye on fire, Marathon bombers identified, etc. | Analysis of a specific rumour. |
| Olympic medals, death of Bin Laden, US election, geopolitical issues, etc. | Topic-based analysis of a massive amount of live messages around a non-localized news event. |

4.2 General Requirements Established from Literature

As indicated above the following materials will indicate a series of requirements, visible in prior studies that are available to us and the extant literature that is likely to be relevant to the development work within PHEME. In each case we provide at the end of the section a table that summarises the various requirements, the kinds of design considerations they implicate, and the likely significance they will have moving forward.

4.2.1 Uncovering Stories

A primary consideration for the project is the way in which journalistic work is organised such that stories may be uncovered in the first place. Existing work indicates that this can happen in a number of ways, including: the use of news wires and news feeds which assemble breaking stories in a number of ways and can be set with filters by journalists to ensure they receive the most relevant notifications; RSS feeds and email notifications from a variety of pre-selected sources and known individuals; other newspapers and journals; social media, especially Twitter; the radio and television media; phone calls and tips from other journalists; and so on. Twitter and

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news wires tend to be the most regularly consulted of these. With regard to this note the following:

- Twitter is an increasingly important resource used by journalists for uncovering potential stories. Observations of journalists working on the sports desk at the Guardian revealed a strong preference for using the web-based Twitter service rather than Tweetdeck or the mobile application. The rationale provided for this was that the web-based service requires manual updating rather than giving a live feed. In this way journalists can hold potentially interesting material in place at the top of the list without it vanishing off the screen. Other observations of the routine use of news wire services, where live feed is automatic, revealed journalists either putting a marker against stories of interest, printing them out, or copying them and pasting them into a word document. The common concern here is with keeping possible leads on stories in view and to hand rather than having to hunt them down later. This indicates a need for future tools to provide effective mechanisms for holding salient information in view.
- Other observations of similar kinds of work suggest that there is quite a large variety of user input that can be drawn upon, extending beyond specific tweets or other direct UGC. This can include things like aggregated trends, the most re-tweeted tweets, lists of prolific twitter users and so on. Additionally, where journalists are making regular use of their personal Twitter accounts it is evident that they are quite assiduously crafting the lists of people they follow in order to maximize the chances of them encountering relevant tweets in the future. Similar cultivation of contacts occurs on Facebook and LinkedIn, as well as through more traditional lists such as email and mobile phone contacts. All of this suggests two distinct core requirements. One of these relates to providing support for the identification of what kinds of things are capturing people's interest at the moment. The other relates to supporting activities of identifying and retaining prospectively useful future sources which, in the case of social media in particular, is not a static enterprise but rather one that requires ongoing management to ensure ongoing relevance. Note that these kinds of sources may currently be spread across a number of different applications and stores.
- Assessment of previous prototypes of dashboard-type systems suggest that mechanisms for assembling flexible user-relevant feeds such as Twitter monitoring lists will need to incorporate ways of updating the lists on a frequent basis, at least daily, and possibly more often than that.

| Requirement | Design Implication | Importance |
|--|---|-------------------|
| Keeping potential leads on stories to hand for rapid recall when required. | Information sources that are turned to for uncovering stories should be as easy to preserve and bring back into view as possible. | High |

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|--|---|----------|
| Provide support for uncovering current trends | Integrate into the system mechanisms for uncovering and/or collating trending information across user-specified resources. Incorporate flexible ways of displaying this information so that it can be viewed when required. | High |
| Provide ways of keeping feeds relevant and fresh | Build into the system the scope for regular updating of targeted sources and feeds to reflect current trends and interests | High |
| Provide support for identifying, retaining, updating and managing prospectively useful future sources. | Build into the system ways of making current sources and source feeds visible without drilling down into multiple applications or changing browsers. | Moderate |

4.2.2 Selecting Stories

The selection of stories is tightly related to the preceding consideration of how stories are uncovered. However, existing observations indicate that journalists often have a number of potential stories under consideration at any one time, but not all of them get worked up. There is therefore a further element within the work where actual choices get made. As mentioned above, one resource that is increasingly being turned to for content is UGC (User-Generated Content). UGC can be collected from a number of sources but the most commonly witnessed ones are direct comments to news sites and blogs, email, and Twitter:

- Materials gathered from journalists working on the Guardian sports desk confirmed a regular use of UGC. A particular challenge uncovered here is the varied circumstances in which UGC may need to be engaged with by journalists when assessing whether to make use of it. When covering live events selection has to happen very rapidly because of the difficulties of staying on top of providing coverage of the event itself. Under these circumstances UGC has to be monitored as quickly as possible. In this respect Twitter was found to be more amenable to review than emails because of the 140-character restriction. Requirements here relate to a need to be able to support this varied kind of engagement with UGC. At some times of the day selection may be open to happening quite leisurely with lots of time for judgments of interest, relevance and veracity to be made. At other times these judgments may have to happen in minutes or seconds.
- Actual decisions regarding which stories to run with pass through a number of phases: the initial application of crude criteria regarding what might count as a suitable story in the first place, such as relevance of content to the interests of the specific journal, potential interest of the story itself, the presence of verifiable information, what else is already on the brew, and so on; the exercise of journalistic ‘gut-feeling’ as to what might be best to run with;

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discussion of the story with one's peers; discussion of the story with editors and at editorial and group meetings; the way the story shapes up as it is written; and how the story is or isn't overtaken by turns of events such that it gains or loses relevance. This work is embedded within the use of a range of different resources, mostly face-to-face interaction, but also phone calls, emails, text messages and instant messaging, and so on. Particularly key is the work of negotiation with editors through to the point where the pursuit of the story is ratified and part of the work is also preparing oneself for the work of explaining a story to the editor, often based upon understandings of what kinds of concerns editors may exhibit such as the importance of figures to back up claims and what kinds of stories they shot down just a week ago. Requirements here are diffuse and chiefly relate to providing surrounding context and the scope for verification because most stories that are not relevant or not interesting are dismissed at first encounter. This points to a complex calculus which involves the weighing up of things like how much work it will take to make a story viable against its relative pertinence or merit in view of what else is also to be considered for pursuit at the same time. Particularly relevant support of value here would be an indication of what the work of verification might look like before that work actually takes place.

| Requirement | Design Implication | Importance |
|---|--|-----------------|
| Support rapid assessment of UGC and its usability in terms of interest, relevance and veracity. | Provide (as is planned in PHEME) mechanisms for assessing, highlighting and making visible at a glance aspects such as veracity and relevance. Conjointly, being able to rapidly integrate usable UGC into the ongoing stream. | High |
| Provide ways of rapidly seeing what elements of a story might require verification and indicate what resources are available for the verification to take place | Build in mechanisms for recognizing and highlighting elements in initial sources that will require some form of verification. Provide further indicators of the available resources for doing that work of verification or, where available, indicate where veracity and required detail has already been established. | High / Moderate |
| Supporting tracking of several stories at the same time | Build in capacity to context switch between different dashboard instances | High / Moderate |

4.2.3 Verification

The work of verification itself is often embedded within the preceding activities associated with first uncovering possible stories and then choosing between them, but it is also a feature of the ongoing composition of journalistic text (and, indeed, other media as well):

- A fundamental part of journalistic practice, visible in observations and emphasized across numerous sets of guidelines, is the checking of facts and sources. The actual work of checking can happen in a variety of different ways but always turns upon a) the recognition of features that require verification, and b) the location of means whereby verification can take place. A core requirement is therefore the support of these two features, regardless of the specific ways in which this is actualized. It should be noted that this is something that can happen when a possible story is first uncovered, when candidates for selection are being considered, once the story has been decided upon, and even afterwards as the story is revised, subbed, translated, submitted for editorial approval, or even once published.
- Discussions of the use of UGC (User-Generated Content) at the BBC indicate that an increasingly important feature of how journalists verify the trustworthiness of UGC is by checking locations against maps and geo-located images. This suggests that verification support should incorporate easy ways of moving between UGC and these kinds of resources, ideally through these kinds of associations being already ready-to-hand should they be required.
- Another resource that has been pointed to is the use of the expertise of others within the same organisation to assess certain aspects of the content such as language use. This points to a classic topic in knowledge management where the requirement is to somehow make visible the range of expertise in one's organisation such that it can be drawn upon as and when it proves relevant.
- More technical treatments of UGC can include things like verification of date by tracking down the upload provenance of content or comparing imagery to discoverable weather and light conditions in the claimed location. Here the requirement is to be able to facilitate smooth and timely interaction with the technical resources that can expose this kind of information.
- BBC materials relating to the use of UGC also indicate the importance of preserving and keeping up to date lists of verified materials and providing mechanisms for ensuring that relevant materials of this order are made visible to people as they work on particular stories.
- Other resources also stress that, even in the realm of digital journalism based upon UGC, more basic techniques for verifying content continue to be relevant, such as personal inspection of user profiles to see whether or not they promote trust, making phone calls, sending emails, and even visiting people in person where this is feasible. This underscores an ongoing requirement to continue to make available basic information such as a source's profile, affiliations, and contact details.

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| Requirement | Design Implication | Importance |
|---|--|-----------------|
| Provide support for recognition of features that require verification | The system should be able to recognise features that might require verification and should be able to highlight these to users | High |
| Provide support for locating ways in which particular features might be verified | The system should have components that are able to indicate potential verification strategies according to features identified and should be able to point users towards suitable resources for following those strategies | High |
| Provide to-hand map and image based verification resources for UGC | The system should be able to identify location relevant elements within UGC and be able to associate these with relevant maps and images. These should then be made available upon request (e.g. by clicking on a simple link or button) | Moderate |
| Provide up to date information about available expertise for the purposes of verification within the same organisation or one's personal network. | Build into the system ways of collating and making visible people's known expertise in various domains such that they can be proposed as potential experts in relation to the story in hand. | High / Moderate |
| | | |
| Provide ways of bringing together quickly all available information regarding a source's profile, affiliations and contact details. | Build into the system a mechanism that identifies sources and assembles from all available online repositories profile and contact information for the sources so that these can be inspected and drilled into according to need. | High / Moderate |

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|---|---|-----------------|
| <p>Provide ways of handing over materials requiring technical verification to relevant and available verification providers.</p> | <p>Provide a conduit that is able to: recognise and extract elements requiring technical validation; to then assess availability of appropriate sources of validation; to forward those elements to the relevant source; to capture the source’s findings; and to then ensure return of the findings to the originator.</p> | <p>Moderate</p> |
| <p>Provide ways of keeping and updating a store of verified materials and making visible those materials as and when they are required.</p> | <p>Creating and maintaining a database of verified materials and ensuring that it is indexed in a way in which links to verified content relevant to specific stories can be made visible.</p> | <p>Moderate</p> |

4.2.4 Handling Supposition, Speculation and Rumour

Journalistic work is often about more than just the simple verification of facts. A central feature of verification work that is relevant to PHEME is the way in which journalists handle materials they see as being currently grounded in supposition, speculation and rumour. This is central to the PHEME project and is an area that is currently under-researched. Some points of relevance are:

- Many of the existing ways in which supposition, speculation and rumour is handled are a part of the verification activities already discussed above. The specific requirement here is a) to be able to directly recognise content as amounting to one of these things, b) to be able to track the provenance of such content, and c) to be able to provide an assessment of the validity or otherwise of such claims. These are central components of the proposed PHEME platform. Additionally, note:
- Reflections upon the use of UGC at the BBC indicate ways in which it is used in tandem with other resources when potentially dubious claims are encountered, e.g. by using Twitter to broadcast requests for verification, use by other parties of other resources such as those already mentioned above to provide assessment, using Twitter to circulate revisions and correctives. This suggests a need to support fairly rich and diverse workflows for some kinds of verification, especially in the context of news journalism where speed is often of the essence.

| Requirement | Design Implication | Importance |
|---|--|-----------------|
| Provide a way of assessing the validity of suppositions, speculative claims and rumours as and when they are encountered. | Build a system that can recognise supposition, speculation and rumour. Provide mechanisms for uncovering the provenance of such content. Provide a mechanism for assessing the veracity of such content. Provide a mechanism for suitably feeding back the outcomes of such an assessment to users. | High |
| Provide support for workflows that can: exploit feeding social media requests for verification into external checking mechanisms, provide rapid feedback on the output of those mechanisms, exploit social media to provide confirmation, revision or correction of previously unverified social media content. | The system should be able to support an end to end process that covers the issuing of verification requests, the identification of appropriate verification protocols, the exercise of those protocols, the communication of the outcomes to the originator of a verification request, and the shaping of responses to the original content. | High / Moderate |

4.2.5 Writing Up Stories

Of course, a central part of journalistic work is the actual writing up of stories and the actual work of writing in this context is under-explored in the literature. Examination of this will feature more fully in later revisions but some initial observations here would include:

- Something noted in several sources is the way in which journalists will often seek to assemble their materials into a single text document. Relevant content from other sources is often copied directly into this document for ease of reference without having to switch between numerous different windows, and text is often composed around these materials, typically with a story lead that summarizes the following content at the top of the page and with the title being composed last.
- Around this key documents are often downloaded or even printed and annotated as a further source of compositional reference.
- Additional, enriching elements can include the conduct of interviews, the recording of those interviews, the editing of those interviews and the subsequent incorporation of either transcripts or audio / video clips into the journalistic product.
- Other materials such as scans of documents or UGC may also need to be embedded in the product.
- Finalisation of the story often also includes the location of suitable images, which may involve negotiation with in-house providers of such images or may involve the use of various online image libraries.

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| Requirement | Design Implication | Importance |
|---|--|---|
| Provide tools for easy compilation of materials to a single file from across multiple resources in a consistent format open to specification by the user. | Provide as a feature of the system a means of checking relevant sources and having them already collated to a single place in a pre-specified format. | Moderate |
| Provide automatic association of resources to a specific story as soon as compilation is undertaken. | Incorporate into the system a means of tracking all resources that are copied from within the construction of a story file such that the association is preserved. | Moderate |
| Provide for easy and flexible assembly of multimedia content and UGC as a story is being crafted. | Provide authoring tools as part of the system. | Low (news organisations have already invested heavily in this and a range of applications are already in existence) |

4.2.6 Revision and Re-Verification

Another notable feature of journalistic work is the way in which text is continuously and iteratively revised and reformulated, both by its original author, and by other parties engaged in ‘subbing’, ‘editing’ or ‘translation’ activities. This frequently leads to a further round of verification work. A further element of this that is increasingly visible is the use and curation of UGC, especially in the context of things like liveblogs:

- Observations of use of UGC by the BBC indicate a growing role for journalists in the curation of UGC generated through social media such as Twitter into ongoing ‘conversations’ through artefacts such as liveblogs. Others also discuss the use of Storify to accomplish this. Curation involves the selection of UGC to publish to the blog but also involves commentary and elaboration around this content. As such the ‘story’ is continually being developed and revised and demands ongoing verification of relevant features of the content. There is therefore an evolving set of requirements here regarding the support of these kinds of activities such that: usable UGC is uncovered and made available, potentially from a variety of sources (e.g. direct comments to news sites, emails, tweets, Facebook comments, and so on); verification support is enabled where necessary; selected content is easily copied and crafted into place; and, where appropriate, re-crafting, re-verification, and updating is enabled. This process currently involves the interleaving of a number of different resources. There is clearly space to simplify the workflow but, at the very least, tools designed by PHEME will need to integrate into this process in as seamless a fashion as possible.

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- Various materials relating to the use of UGC in creating assemblies such as liveblogs also indicate that there are also points within the generation of these where summaries have to be provided. Resources that facilitate the summarization of selected UGC would therefore also have some efficacy here. The principal challenge is quantity as major events can generate large amounts of UGC. Some sources also indicate that, where coverage relates to live events, filtering of these materials can cause significant trouble. Summarisation usually takes place at the end of events so time here is less critical.
- It is also worth noting that investigations of journalistic work suggest that, even with relatively traditional stories, there is also a sense of there being a developing story and journalists may continue to use a range of resources including Twitter feeds and searches, Facebook groups, wires, and government press releases to monitor a story's progress and incorporate changes along the way. In this way stories can sometimes remain open to revision for some time after they are first notionally 'completed'.

| Requirement | Design Implication | Importance |
|---|--|------------|
| Provide effective ways of verifying and incorporating UGC in the development of ongoing stories as an ongoing process with suitably straightforward mechanisms for update and revision of content | Provide a liveblog curation tool that incorporates the verification mechanisms developed above / Provide suitable APIs for integrating the verification mechanisms into the processes provided by other curation tools such as Storify | High |
| Provide resources for being able to summarise UGC over a selected period. | Building into the system mechanisms that can do text highlighting within UGC according to chosen features and, potentially, certain kinds of text summarization. | Moderate |
| Provide for the ongoing tracking of story-relevant content after it has gone through the initial publication cycle such that important new content can be identified. | Build into the system mechanisms for automatically associating relevant content to recently released materials with a concomitant mechanism for making this visible and, potentially, providing alerts. | Moderate |

4.2.7 Tools

Underpinning all of the work journalists do are the tools they make use of in order to go about their daily business. Whilst there are a multiplicity of tools available for this kind of work some primary organizational features need to be considered:

- The study at the Guardian of work on football match coverage revealed that journalists have highly individual ways of organising their screen displays. This suggests that it is important that the display features of tools designed to support journalists are customizable and open to being organized by the journalists themselves in a variety of ways.
- Journalists frequently work in an interleaved fashion between a large number of different resources, including different kinds of media. This can lead to heavily over-populated screens, with journalists working between a wide range of different tabs and windows. Where video is a primary focus journalists often seek to work across multiple displays to ease the congestion and make it more straightforward to work seamlessly between video and other media. Tools supporting journalists therefore need to be careful to provide for something other than all-in-one displays. Instead it is important that features of most relevance to the task can be foregrounded whilst others can be easily set aside but recalled and switched to without difficulty.

| Requirement | Design Implication | Importance |
|--|---|-----------------|
| Customizability of display features | Avoiding a single block display and providing instead a collection of logical components that can be opened and closed and moved around the screen according to preference. | High |
| Display simplification so that: only features of relevance stay in the foreground; it is easy to bring other elements to the fore instead; cross-referral between different elements can be accomplished without continual switching | Providing modular displays such that different elements can be brought to the fore according to need, switched between, and organised for simultaneous access | High / Moderate |

4.2.8 Practices

Ultimately all of the other concerns we have been addressing are embedded within an assembly of journalistic practices and bodies of journalistic reasoning that provide for the realization of any specific instance of journalistic work. Additionally, existing studies also make visible the following kinds of relevant concerns:

- Journalists working on the Guardian sports desk were noted to use a mixture of their own Twitter accounts and the organization’s account. This mix has been seen amongst other journalists as well. In some cases it is a case of different journalists preferring one or the other. In some cases it is a case of journalists using both. Various mechanisms were seen to facilitate the use of both, such as having different accounts open in different browsers. Consoles are also used, such as Hootsuite. The background to this mix is that different people are followed and tweeted to according to which account is chosen and there are different reasons for following and tweeting, according to circumstance. A number of journalists have personally crafted a wide selection of trusted resources whose tweets may provide them with potential leads. At the same time, tweeting news was seen as needing to come from the officially sanctioned account. These are fundamentally distinct orientations and both require support.

| Requirement | Design Implication | Importance |
|---|--|-----------------|
| Equally good access needs to be provided to both personal and official resources for getting leads and communicating stories. | Build a system that is able to support selecting, collating, switching between and keeping in view relevant resources attached to both personal and organisational identities. | High / Moderate |

4.2.9 The Organisation of the Work

Journalistic work is further organized around its own particular routines and rhythms and foundational organisational constraints. These, too, give rise to certain kinds of requirements:

- Observations of sports desk work, and also of broader forms of news coverage, have revealed an oscillation between periods of high pressure where it is hard to keep on top and deliver in a timely fashion and other periods where the pace is less intense. This results in journalists making use of quite distinct kinds of resources at different times of day. Short-form materials such as Twitter feeds, for instance, that are easily understood at a glance and that can be easily copied and pasted from one place to another are concentrated upon when pressures are high. By the same token, broader information resources that require more focused engagement, such as aggregated statistics and trends and web-links, are more commonly turned to when things are slower. In some cases these busy and quiet periods are predictable. For instance first thing in the morning when a lot has to be looked at and got underway can be a period of higher pressure. Providing cover of live events can be equally

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demanding. Afternoons and late at night may be quieter. At the same time, the breaking of stories for news is inherently unpredictable so pressure can arise at any point. What is clear is that resources that require equal levels of engagement at all times, especially where that engagement is more than momentary, would sometimes hinder effective journalistic practice. Thus resources need to be open to being organised so that they can be ‘light’ and rapidly intelligible in one mode, but open to being shifted to other modes of presentation where content be exposed in greater depth, with the shift in modality being itself quick and easy to accomplish.

- News is a 24-hour a day business and events do not go on hold when a journalist leaves their desk. Many news organisations therefore operate in shifts. Observations at the Guardian and elsewhere show that communication between members of different shifts can be limited or piecemeal. This can be problematic for a number of reasons. Processes may have been begun that need following through because to leave it until the next day may be too late. People on a new shift may unwittingly replicate work that has already been undertaken by people on the previous shift. Held off leads may get overlooked. Items that might have been pursued at other times may not get pursued close to the end of a shift and this needs communicating. All of this points to a need for mechanism that provides for effective cross shift communication and an easy way of inspecting potentially salient previous activity by colleagues.

| Requirement | Design Implication | Importance |
|--|--|------------|
| Alternative modes of presentation ranging from at-a-glance understandable and usable to comprehensive and expansive. | Provide a tool that has different collapsed and expanded views where collapsed views still provide coherent and usable summaries, but where movement to expanded forms or other kinds of content can be done with minimal effort | High |
| Cross-shift, cross personnel communication of incomplete, postponed, and salient prior action. | Effective tools need to support cross-personnel working that is not just organised around a division of labour but also around temporally encompassing more than one individual working on the same task | High |

4.3 Requirements from the Literature: Core Set

The literature-based requirements were broken down into a core set of information and interaction needs and then collected around the identified journalistic work processes to kick off the iterative mock-up development process. It is important to note however, that the results will have to evolve as and when new insights and requirements come up during the whole duration of the PHEME project.

4.3.1 Uncovering and selecting stories (as candidates)

| Information need | Interaction need |
|--|--|
| Uncovering stories | |
| Trending information / topics | Save / mark for later |
| Last update (or real time). | Read saved / marked information (how long back?) |
| Selecting stories | |
| Veracity indicator | Mark for verification |
| Verified information (sources, entities) | |

4.3.2 Handling supposition, speculation, rumour and verification

| Information need | Interaction need |
|--|--|
| Handling supposition, speculation and rumour | |
| See if information is supposition, speculation or rumour. | Review steps that have been taken in Verification process |
| Level of Veracity | |
| Verification | |
| Marked items or information for Verification | |
| Verification hints: <ul style="list-style-type: none"> - Location - History (if available) - Etc. | Annotate Verification Process to specific item / information |
| Verification sources?? (e.g. contacts in house / external) | |

4.3.3 Writing up stories and revision / re-verification

| Information need | Interaction need |
|-------------------------------------|--|
| Writing up stories | |
| - | - |
| Revision and re-verification | |
| - | Integrate personal UGC / feeds into tool |

4.3.4 Practices and organization of the work

| Information need | Interaction need |
|--|--|
| Practices | |
| Keeping in view relevant resources attached to both personal and organisational identities (e.g. Twitter accounts) | Selecting, collating, switching between relevant resources attached to both personal and organisational identities |
| Revision and re-verification | |
| Provide views for quick overviews (summaries) and detail-views for in-depth understanding | Allow cross-personnel working: sharing of all information on specific tasks. |

5 Debrief from SWI swissinfo.ch Ethnographic Study in April 2014

The findings presented in this section build upon the preceding requirements section by drilling more deeply into a number of the phenomena already discussed. The materials being drawn upon to accomplish this are a set of detailed ethnographic observations and interviews that were conducted from late April 2014 onwards, in keeping with the iterative approach to development already discussed above.

The findings are presented along four different but tightly interrelated axes of consideration. First of all there is a brief outline of the organisation in which the ethnographic studies were conducted in order to give a sense of the backdrop around which all the work and its associated practices and tools are constituted. Then we will look at the recurrently visible practices that are engaged in by members of the organisation to accomplish a variety of different ends but which are recognisably core features of the work of being a journalist together with practices that can be seen recurrently across different work domains that are honed in specific ways to accomplish journalistic work. In a similar vein we shall then present briefly some of the principal tools journalists use to get the job done, with that use being once again located in a range of different activities. The most detailed section relates to the actual conduct of the work and its component tasks, loosely organised around considerations of the different kinds of use case scenarios and activities members of the organisation might be seen to understand themselves to be engaged in, some of which relate directly to the production of content, and some of which relate more broadly to the provision of an organisational apparatus within which the production of content can be brought about. In all cases it should be remembered that the handling of rumours that forms the central focus of the PHEME project is something that is handled as an ordinary, constituent part of the work practices and journalistic reasoning we outline here. Technological components arising from the other work packages will therefore need to be similarly designed to be accommodated within the everyday features of this body of practice, even though there are certain aspects of the workflow where an interest in rumours may be rendered more explicit.

5.1 Organisational Backdrop

SWI swissinfo.ch is the international service of the Swiss Broadcasting Corporation (SBC). It now provides exclusively online content but evolved out of the Swiss shortwave service, which started in 1935 and became well-known during the Second World War as the only neutral broadcaster in Europe presenting facts from both major camps. After the Second World War the service became Swiss Radio International. It took on a similar role of neutral broadcasting in the Cold War though without the same degree of international renown. SRI became a web-only service in 2006. As a consequence, some of SWI swissinfo.ch IT staff were originally trained as radio technicians and, whilst there is no TV studio, the radio studios have still been kept functional for recording interviews and podcasts. Additionally, most of the older journalists at swissinfo.ch were originally trained for radio.

The shift in mission and reduction in budget resulted in fewer personnel but more languages. The swissinfo.ch website works within a federal government mandate to “distribute information

about Switzerland internationally” to an “international audience interested in Switzerland” and “Swiss citizens living abroad” and is seen to supplement “the online offerings of the radio and television stations of the SBC”. It provides content in 10 languages (English, German, French, Italian, Spanish, Portuguese, Japanese, Arabic, Chinese, and Russian). Most languages operate with 3 to 4 people in the service’s main office in Bern and a few correspondents in other locations. SWI swissinfo.ch also operates out of offices in Geneva and Zurich and is, additionally, represented in the Swiss parliament’s media centre. It largely adopts a more magazine style approach with the primary content being features. The only language with any real news activity is English. The service’s website characterises its overall mission in the following terms:

“The online service offers a Swiss view of topics and highlights Swiss positions on international events and developments, while reflecting the view of Switzerland from abroad. SWI swissinfo.ch’s coverage focuses on politics, business, culture, society and research. SWI swissinfo.ch also provides specific information for the Swiss abroad to assist them in exercising their political rights in Switzerland (vote dossiers).”

Because of its news component the majority of the studies outlined here took place in the English department, which is situated in one large open plan office on the second floor of a three storey unit within a larger complex of buildings operated by the SBC in Bern. The department has 15 staff (an Editor, a Deputy Editor, 1 Administrative Assistant, and 12 Journalists). It is also organisationally responsible for a team of 3 video-journalists and has regular correspondents in Zurich, Geneva and Paris. A total of 3 people operate the news desk over any one day, with there being 3 staggered but overlapping shifts, from 07:30 to 16:00; from 08:30 to 17:00; and from 13:00 to 22:00.

5.2 Core Practices

During the study at SWI swissinfo.ch a range of activities were recurrently visible within the working practices of the journalists observed. Some of these practices are more specifically tied to the kinds of work journalists are engaged in, others are more pervasive features of office-based and written work that are adapted to journalistic need. A distinction is therefore made here between the two.

5.2.1 Journalist Specific Practices

A highly specific aspect of journalistic work on newsdesks is the monitoring of *news wires*. At SWI swissinfo.ch the principal wires used came from the official Swiss news agency and journalists on the newsdesk were seen to monitor these more than almost anything else over the course of the day. Where possible they were kept open in a separate window and flipped to recurrently between tasks.

Another recurrent activity that is witnessable is the monitoring of what is currently happening on other *news sites*. Although this was somewhat specific to individuals there was a certain range of Swiss, German and French sites that featured strongly here, either because they were seen as the competition or because they were seen to provide guidance as to what aspects of the news were particularly current. One of the principal distinctions between this and the use of the wires is the fact that the wires tend to be open in the background all the time, whereas monitoring of other

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news sites involved actively opening them up in a browser. They were also not always given the same degree of complete trust regarding sources as the wires,

An equally important practice is that of looking at *press releases*. Whilst it is, of course, the case that just anyone can look at press releases if they want to, it is one of the central aspects of how journalists both pick up on new material and verify attributable facts and statements with sources. Thus it can feature as a part of several different courses of action. The most important and regularly inspected press releases during observations were ones coming from the Swiss government, the United Nations and the International Red Cross. It could also be both a routine activity, undertaken in the course of looking around for stories, and an occasioned activity arising as a consequence of seeking out specific details.

Similar to the professional inspection of other news sites and press releases is a set of practices devoted to looking at news delivery in other kinds of media. So journalists were also seen to look from time to time at *image-based news sites* (especially Keystone). Here it should be noted that SWI swissinfo.ch also does regular image galleries so this is quite close to their own material. Journalists were also seen to look regularly at *radio and TV news stories*, especially those coming from within the SBC, to see what is being reported on in broadcast media and how the stories are being covered, not to mention conventional paper-based *newspapers and journals*, most often first thing in the morning, and once again to get a sense of what stories are being covered and how.

It is, of course, the case that the news media they are looking at are primarily directed to a news consuming public so the practices of looking at news are not especially unique to this community. However, what is unique is the systematic trawling of these kinds of resource which, for non-journalists, would register as being news obsessed.

Many news organisations also provide *digests* of stories covering particular topic areas or published over certain periods in one form or another. Some organisations also actively work to collate stories that refer to particular countries but that have been published in the foreign press. Whilst there are a number of communities who might find interest in these kinds of digests for one reason or another, journalists here took a strong professional interest in keeping on top of how Switzerland was being represented abroad and many of them subscribed to these digests as a matter of course, receiving them periodically through their email and scrolling through them as and when they had an opportunity. They were also proposed to be a way of monitoring what stories they might have been missing.

As well as looking at all of these other news resources, journalists were also regularly seen browsing their *own news site* throughout the day. Part of this was a broad interest in what people were putting out and amounted to a kind of monitoring. It was also more specifically bound up with the need to provide links to related stories for stories they were publishing and would fall in the context of them using the content management tool to upload stories they had written.

Other more specific online practices included: *the use of government webpages* to glean various pieces of legal and statistical information to refine stories already underway; and *the use of Google Crowds* to acquire hints regarding particular popular trends that might point to stories not visible to them in other ways.

Some of their more refined practices related to the increasing pressure to populate stories with more than just textual content. Thus they were also witnessed on occasion to set about *creating tables* and, more specifically, to use a dedicated application called DataWrapper to *create*

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infographics. They could also get involved in the *assembly of collections of images*, and even the *preparation of audio and video clips*. An additional, more traditional aspect of journalism possessed of its own body of competences is the *conduct of interviews*, which could become an element of both news and feature writing. This, in turn, involved having competences relating to *recording people over the telephone*, the *use of recording software*, and even *the working of equipment in recording studios*.

Whilst clearly not something that is exclusive to journalistic work, the above body of work could also lead to journalists having to *listen to audio files*. There were two primary ways in which this activity was witnessed: first of all as a feature of working up a news story where specific quotes from certain people were being sought and television or radio coverage was expressly listened to to locate those quotes; secondly, in the context of working up things like podcasts where previous interviews were listened to in order to extract specific sound clips that could be played within the podcast. Sound clips can also be utilised in the context of news stories and features as an additional multimedia element. If captured recordings were to be used in more conventional text-based reports journalists also need familiarity with the work of *transcription*. In the context of SWI swissinfo.ch with its numerous different languages one additional feature of the work was *translation*. This could also be direct translation from stories originally prepared by journalists working in other departments.

In some ways more tightly specific to working at SWI swissinfo.ch, but involving the kinds of competences that would nonetheless be required in other organisations, was the particular *working of the local content management system*. This involved, variously, uploading and downloading files, managing images, writing captions, the completion of metadata fields, the setting of release times, and the creation of links to other related material. With regard to the latter, the location of related material could involve searches of their own news site. This could, somewhat perversely, mean conducting Google searches as opposed to use of the system's own search tool, because Google was seen to be 'quicker' and more 'effective'. Having acquired relevant titles, however, links would still need to be made by searching the local organizational archive. One additional aspect of using the content management system, that involved the exercise of a distinct set of judgements regarding probity and interest, was the review and editing of user comments for display on the site. At a more editorial level, the content management system was also used for activities such as the setting of filters on the side feeds being provided by other news organisations, though this was not a frequent concern. Much of the reasoning here was similar to the reasoning involved in setting the filters for the wires.

A potentially more unique set of practices, arising out of SWI swissinfo.ch's particular organisational structure, related to the work the journalists were seen to get involved in with the video journalists, including the *provision of voiceovers* and the assembly of specific items such as *podcasts*.

5.2.2 General Practices

Broader sets of recurrent practices can be seen to have different kinds of situated characteristics according to the kinds of tools and resources being used. Presentation of computer-based work here is therefore divided across expressly online activity, media-related work, work centred upon various kinds of digital documents, the use of various kinds of administrative tools, and some broader comments about some general orientations to computer-based work. Aside from this consideration is then given to the use of various kinds of physical paper-based documents and

resources and, beyond that, to some of the recurrently visible patterns of situated interaction. In all cases the practices discussed here are ones that could be found in many different kinds of offices and across a large number of different kinds of professional activities. When we look at the work itself we shall see some of the ways in which these are bent quite specifically to the exercise of journalistic practice in various ways. Thus, whilst one might say, tritely, that many different kinds of work involve amongst other things the conduct of searches using Google, just how such searches are actualised and embedded within a larger flow of work is tightly tied to the specific accomplishment of specific kinds of work. Nor do searches as a feature of looking out for potential stories look at all the same as searches conducted within the context of tracking down specific bits of information whilst in the course of composing a piece of text.

5.2.2.1 Computer-Based Work:

5.2.2.1.1 Online Activity:

In terms of general online computer-based work one of the most important activities for journalists is the checking of their email. Email use is embedded in a wide range of their routine sets of practices, playing a part in the collation of possible leads, the assembly of evidence, the work of proposing stories and communicating choices, the work of bringing together materials for writing, the exercise of sharing materials for subbing, and a variety of administrative tasks and practices devoted to intra- and inter-departmental coordination.

Just as with checking and reading email, so the sending of emails to people is also a routine communicative practice for journalists that is embedded within the accomplishment of a wide range of different tasks. All aspects of hunting out and selecting stories may incorporate a need to send emails at some stage. Similarly both verification and writing stories can involve journalists in sending emails to other people to clarify specific matters and the conclusion of the writing process may well implicate the sending of an email to the person who has agreed to sub a story. Subbing, too, may involve sending emails back to the original author or to other parties to pose specific questions. In the case of publishing stories emails may be sent to editors or sub-editors for the purposes of notification. Additionally, sending emails can feature in a wide range of administrative and coordination activities. Across all activities, of course, the sending of email may be a matter of replying to others as well as an initiating action of some kind. Taken together, the checking and sending of email is perhaps the single most pervasive activity visible (in a news context) after the checking of the wires.

An additional subset of the broader practice of sending people emails relates to the sending of documents as email attachments. Once again there is a range of circumstances in which such a practice might be relevant, from the sending of their own text to the sending of other documents that might be relevant to a story someone is writing, not to mention a variety of reasons for sending documents of a more administrative nature. It should be noted here that the principal practices associated with passing over stories for subbing do not usually involve the direct transmission of the text in this way. Subbing related emails are more usually notifications to effect handovers and returns. The documents themselves were more usually collected via the network repositories shared across the organisation which included set places for putting documents of different kinds of status so that their presence there was already implicative for what kinds of actions might happen next.

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Other ways in which email is implicated in the work are the receipt of *news alerts* from nominated sources, often via RSS feed and feeds from specific journals, usually relating to the specific interests of the journalist concerned.

A lot of other routine activities are also effected online, many of them recurrently throughout each working day. So a critical feature of the work is the conduct of Google searches. This is one of the principal gateways into information discovery for journalists with other resources being more tightly occasioned. Other commonplace online activities are: image searches (both for latest image news and for the purposes of locating images to accompany their own articles); specific occasioned browsing of websites that are relevant to some story in hand (prospective or otherwise); occasioned reference activities such as the conversion of currencies, translations, definitions, and Wikipedia.

Another very important resource is social media of various kinds. Some of this is more occasioned, such as looking at blogs relating to particular topics. Much of it, however, is more of a recurrent and prospective nature. First and foremost in this regard is the use of Twitter. All of the journalists observed used Twitter to some degree. As a minimum this would be occasional scrolling through the organisation's official feeds from time to time. Some journalists are much more active than this, however, using both the official and their own accounts, specifically conducting searches and using Twitter lists and trends, re-tweeting feeds of interest, and posting from time to time. Official posting was bound up with the completion of articles. All news articles were supposed to be promoted through tweets and Facebook posts and this is largely a feature of the workflow. Journalists also made active use of their own networks on Twitter, however, and some of them post regularly in their own capacity, being to some extent liberated in this way from official accountability (though there are significant limits in this regard). A further refinement in Twitter use is the reorganisation of feeds via Hootsuite, with some journalists using this as the principal means of reviewing latest feeds. This has the advantage of being able to set it up to display feeds relating to specific topics, and amounts to a rather similar resource to the wires, though obviously from a much wider variety of sources and with highly variable degrees of authority and credibility.

Even though, like Twitter, it is a commonplace feature of a huge number of different people's everyday activities, *using Facebook* is also an active element of journalistic work. Distinctions need to be made here between the organisation's own Facebook account and people's personal accounts. A number of journalists make active use of both official and unofficial accounts as a feature of their working day. There is a routine need to monitor the organisation's Facebook account to see what others are posting and what comments are being posted in relation to their own material. After the publication of each new story there is also an expectation that a summary and link will be posted to Facebook. However, as with Twitter, many journalists have also cultivated a range of acquaintances on Facebook who may at one time or another provide leads for stories, so people working on the news desk often look to their own Facebook accounts as a part of their quest for material. Additionally, journalists often post commentary around stories in their personal rather than their organisational capacity, where there is a different kind of licence attaching to how a story might be handled.

A final online activity of mention is the use of chat tools. In the case of SWI swissinfo.ch staff this is almost entirely Microsoft Lync because this is the tool that comes as a default with their PCs. Online chat was seen to be particularly useful when some staff were working remotely but still expected to coordinate for the production of material on the news desk.

5.2.2.1.2 Media-Related Work:

Some of the media-related work they engage in is more tightly tied to the specific work of journalism, for instance the playback, transcription and editing of audio recordings of interviews. However, while still being bound up with their work, some practices are more seemingly generic. One example here is the streaming of news programmes and video clips from various news sites and YouTube. This, of course, is not undertaken for the purposes of entertainment (or at least not in this context) but is rather bound up with matters such as the hunting out of stories or the inspection of story-related materials in more detail.

Even listening to music was seen to feature in the professional work of journalists. Here it was chiefly bound up with selecting music to use in the context of podcasts the journalists were authoring. The Swiss Broadcasting Company provided access to and rights relating to a large library of music that journalists could turn to and, towards the conclusion of working on podcasts, they were seen browsing this library to try and find music somehow relevant to the content of the podcast itself. Podcasts largely grew out of the feature-writing activities of the journalists rather than their role in publishing news. Preparation of podcasts was work that would largely happen when journalists were not assigned to the news desk, where news desk work and monitoring for arising news stories would take priority over everything else.

One other aspect of media-related work witnessed was the manipulation and editing of images of various kinds. It was routine to include at least one photograph with any story and, once a suitable image had been located, it would need uploading into the content management system alongside of the uploading of the textual components of an article. This invariably included some cropping of the image to meet the standard sizes designated for photos on their news webpages. Thus journalists would have to frame the image within a moveable box. Some image manipulation was seen outside of this for the purposes of honing images to accompany features they were writing. This kind of image work does not appear to happen in a news context where timelines are typically too tight for more sophisticated handling of multimedia.

5.2.2.1.3 Digital Documents:

A vital part of journalistic work that is, nonetheless, based upon a pervasive set of practices and competences, is the creation of digital documents using, typically, applications such as Microsoft Word. Whilst document creation can occur in the course of several different kinds of activities, by far the most important aspect of it here is the creation of documents for the actual writing up of stories.

Just as important a part of the practices associated with creating digital documents is the active copying and pasting of pieces of text from other places, both online and from within other applications and emails. It was a strong and pervasive feature of the journalistic work witnessed to assemble a variety of textual materials of varying kinds of relevance to a story in this way within the single digital document where the story was being composed. It amounted to having all the bits of text one might draw upon, either directly or as source of information and facts, to hand in a single place. Stories in the process of being written were typically a composite of these kinds of materials and composed text. With the copied over bits and pieces slowly being deleted as the relevant parts were incorporated into the text.

As one moves towards the practices associated with subbing and editorial review other digital document based practices come to the fore. Some of these relate to editing and amendment, some to annotation and comment. It is important to note that journalists largely eschew provided track

changes and comment functionality, preferring instead to just go ahead and make changes anyway if they are needed and to do annotation by means of highlighting parts of the text and/or inserting comments in brackets immediately after subject phrases.

As well as engaging in more active changes of documents, another feature that was observed was the practice of simply including annotations to the existing text designed to indicate ways in which the text might be reflected upon, amended or expanded in the future. Once again a notable feature here, that is not necessarily exclusive to journalism but that was claimed to be a strong part of how journalists orient to such things, is that annotations were almost never of the form of using Microsoft Word's own annotation and amendment resources through the 'track changes' and 'insert comment' functions. Instead, comments were inserted in the flow of the text and highlighted and changes were simply made without leaving prior versions visible. This was said to be a result of journalists not liking to disrupt the general flow of a text with extraneous clutter or material divorced from the text itself. Instead journalists claimed a preference for being able to see the text 'as it would read'.

More passive engagement with digital documents included engaging in cross-reference between different bodies of text (e.g. between wires and websites) or, in the case of Microsoft Word documents, reading texts to examine them for errors. Spellcheck and word count functions are used recurrently by both authoring journalists and those who are subbing them. Word count is especially important because there are strict word and character lengths for different components such as surnames, titles, and article leads. Journalists very often found they exceeded these limits in the first instance and were then seen to go through an iterative process of re-wording and re-counting until something appropriate had been achieved. Surnames and titles had become especially problematic for journalists because of a push to use search-engine friendly terms, which sometimes sat in clear tension with what they considered to best sum up a particular article.

Other kinds of digital documents that were occasionally seen being created were digital lists and schedules and, for some kinds of work, PowerPoint presentations. Use, however, is massively centred around Microsoft Word.

5.2.2.1.4 Administrative Tools:

There is a range of practices involving the use of tools and resources that are geared towards underpinning any set of specific tasks and that might therefore be thought of as administrative rather than task-focused. One such set of practices involves the use of printers to print documents. The unit had several network printers at its disposal and people's individual PCs were set up to default print to one of these as standard.

Another aspect relevant to the local network of the organisation is the existence of a range of shared directories and repositories which were used for different purposes, to indicate different kinds of status for their content (e.g. published), and to facilitate coordination. A further element of this was the periodic need for archiving and this too was seen to happen from time to time, not as a systematic follow-on from publication of a story etc., but rather as a separate exercise used to fill time when waiting, e.g. whilst trying to get hold of a contact who is unavailable and upon whom the viability of a story depends.

Other administrative resources being used on a regular basis were various contact lists, schedules, diaries, calendars, and so on. There were a number of different kinds of temporal considerations that came into play in relation to these resources, such as the time of day and who

should be there and whether it was time for things like an ‘eleven o’clock’ or a ‘five o’clock’ story, the weekly schedule and where meetings would fall, and longer term schedules covering things like the release of features in other languages.

5.2.2.1.5 Screen Organisation:

In the preceding requirements section we noted that journalistic work makes particular use of having multiple windows open in different application at any one time, with a fluid movement between them to effect the copying of text from one place to another and for the purposes of cross-reference. This was equally the case at SWI swissinfo.ch. Additionally, it was noted that people on the news desk liked to have certain windows open fairly constantly in the background to support monitoring of things like news wires and email, in case new leads came up. It should also be noted that the news desk operations often had at least one journalist working from a remote site. In these circumstances it was also routine to have a Lync chat window open (typically at the bottom right of the screen) regardless of what other screen-based tasks were being undertaken.

5.2.2.2 Paper-Based Work:

A range of ordinary paper-based practices were seen during the observations. In particular interim work, between an initial digital text of some kind and the ultimate production of another digital text, often made some use of paper-based work. Thus and for instance, it was common practice to print emails and wires giving detail that might subsequently be worked into a story and to then elaborate ideas around certain points by annotating by hand the printed document, or to underline or ring certain aspects of particular interest.

Printed documents were also occasionally handed over to other people for a number of different reasons. One part of this was the mobility of paper for showing someone else a piece of information relating to matters such as story proposals. Several times journalists were seen to print news wires etc. and take the print physically to the editor’s office to make their case. Sometimes this was also used as a strategy for sharing information with colleagues that might relate to stories they were working on. Various administrative documents were routinely printed and passed on, such as documents to support meetings or scheduling activities.

A further category of regular paper-based activity is the making of notes and to-do lists on notepads. This was seen to be pervasive across the journalists and in certain circumstances, e.g. meetings.

5.2.2.3 Situated Interaction:

Of course, by far the largest set of mundane everyday practices being drawn upon to get the job done were those relating to situated interaction. These include things like ways of talking, ways of gesturing, ways of showing, ways of implicating engagement, and so on. These kinds of practices underpin the accomplishment of a vast array of different work-based activities and journalism is no exception. Indeed, for all of its apparently solitary character when engaged in the task of actually writing, journalism also hinges upon interaction with other people in a number of significant ways. A small sample of the kinds of situations where these kinds of competences were seen to hold sway are: at meetings (as attendees, as hosts, as contributors, when directing, when presenting, and so on); when visiting one another at their desks (which was commonplace and where editors had special rights of visiting and interruption); when encountering one another in passing; when showing people things (printed or on screen); when

giving people things for them to act upon in some way; when calling out; when taking breaks together, and so on. Certain aspects of all this also came into play in the conduct of telephone interactions and interviews and conference calls.

5.3 Principal Tools

Unlike the preceding section we will not make a strong distinction here between what is specific to journalism and what is more general. Journalists do not, by and large, busy themselves with a large array of specialised apparatus. Field journalists did once have to carry around some fairly hefty recording devices for the conduct of interviews and they still clearly make use of (much smaller) recording devices such as mp3 recorders. Some of the journalists who had come to the work via jobs in radio and broadcasting also exhibited some more specialised skills regarding the use of studio equipment. However, for the larger part of their everyday work, most of the tools they worked with were unremarkable pieces of equipment that might be encountered in a wide variety of different offices. This does not mean that their *use* of such equipment was not quite tightly bound to the practices of journalism. It simply means that, for the majority of the time, they did not have to operate equipment that was specifically tailored to their interests. Having said this, it should be borne in mind that *there are* a large number of software applications that are specifically geared towards the work of journalism (indeed, PHEME itself is aiming to devise such technical accoutrements). So a part of what we shall be mentioning below is a set of computer-based tools that do attach particularly to the exercise of journalistic practice.

5.3.1 Devices

At the level of devices, and in particular computer technology, journalists make use of a fairly standard array of equipment. All of the journalists observed made use of desktop PCs, and many of them also had access to laptops, tablet computers and smartphones. Some journalists were seen to be more inclined than others to spread their work across these various devices. So at one extreme there were people who were only ever seen to use the organisation-provided desktop PCs with their phones being exclusively reserved for their personal activities. At the other extreme there were journalists who had actively arranged to have different kinds of materials and feeds and different kinds of accounts actively delivering to and being managed upon different devices. This was especially the case with smartphones which were seen to be used in an interleaved fashion with other devices according to the specific kinds of activity being undertaken at the time. In all cases, however, it can be said that modern journalism is completely tied to the practised use of computing devices of one kind or another.

5.3.2 Software etc.

Software on PCs and smartphones and tablets is a critical component of the work for journalists. Some kinds of software are used for highly specific purposes. Other kinds of software cover a much wider range of different kinds of use. One of the most continually used and routine kinds of software being drawn upon was the browser. Most people used the default Internet Explorer option on their PC, though some were also using Google Chrome and Firefox. A few of them had installed several browsers so that they could accomplish several different things at the same time. This proved to be especially relevant for the use of Twitter and being able to have several accounts open at once.

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Some of the software they depend on is either browser-based or dependent upon online access, e.g. the wires, NewsWhip, Feedly, Bitly, video/audio streaming software, email and RSS to email, Twitter, Hootsuite, Facebook, Google Crowds, Google Hangouts, currency converters, and online dictionaries such as Leo. Note how some of these, such as the wires, NewsWhip, and Feedly, are quite specific to journalistic use, whilst others are more general.

A commonplace reference tool that is used by journalists in occasioned ways is *Wikipedia*. Resort to this was witnessed as both a feature of exploring the viability of stories and of working up stories in more detail. The kinds of materials explored were varied but largely fell into either the category of finding out more information about specific organisations or people, or else of finding out more about particular topics or concepts where a journalist's own knowledge was currently fairly scant.

There is also a relatively standard set of local applications that are being used, for instance: Microsoft Word, PowerPoint, and Acrobat Reader to cover the production and review of documents; Audacity to handle audio-based work, including the conduct of interviews; Paint to handle image and graphic manipulation; and DataWrapper that was especially designed to support the production of infographics.

An administrative software tool that was relatively specific to SWI swissinfo.ch was their content management system, called Xobix. The journalists used this principally for the publishing of stories so it was something they were obliged to use on a regular basis, especially when they were working on the newsdesk. Populating the tool effectively provided for the publication of the content to a webpage on their site and its interface was organised accordingly. Use of the tool was apparently tied to the use of a desktop PC. Something that was not ascertained was how journalists were managing remote publishing of their material. During the course of the study it was reported that the organisation would shortly be shifting to use of a new content management system, so the exact organisation of practice around this tool may have subsequently changed. What remains consistent is the fact that journalists have to work with tools to handle the online publication of their material and that these tools will constrain the organisation of their material in certain ways. Another matter of further investigation may be the extent to which the organisational categories of content for online publication remain the same across the various tools that are designed for this purpose.

5.3.3 Other Devices

There are a number of other devices beyond computing devices that are implicated within the work of journalists. We have already mentioned above the use of network printers. Televisions and radios were also commonly mentioned as sources for what news items are breaking or current. This is typically streamed to desktop computers when they are in the office (and was reportedly something they did especially when on the late shift). However, these devices in their own homes and radios in the car on the way to and from work are also being made use of effectively for work purposes, especially in the morning, as a way of discovering what news items are current for the day so that they already had some sense of some of the things they might be covering.

Other regularly used devices beyond computing activity are the telephone and much of the non-computing equipment in the sound studios where they would sometimes record interviews.

5.3.4 Paper as a Resource

It should be remembered that paper is also a technology that can support a range of activities and we have already started to outline the ways in which it might get drawn upon in the realisation of certain practices. As discussed some time ago in the work of Sellen & Harper (2002) paper offers some distinct and important advantages for doing certain kinds of things and is not readily displaced by digital technology in those circumstances. These advantages include being able to position materials alongside of one another in informative ways, portability and accessibility, the reading of cross-referential text, and the scope for placing several different bits of paper on ad hoc surfaces for mutual access and annotation during collaborative work. We have also seen how notepads were used pervasively for portable note-taking and the listing of tasks.

5.4 The Work

This section is divided into two main parts. In the first of these we will look at the organisation of specific kinds of activities within journalistic work and how this has a rough order or flow to it, already outlined in the requirements section above, that moves from the initial efforts made to discover potential stories to the point where those stories are actually, written and published and reviewed. In the second part we will look at the activities that fall outside of this because they are not specifically directed at the actual production of content so much as at the provision and management of a state of affairs whereby the production of content can happen. This second section also very briefly looks at some of the more notable issues and bottlenecks that were uncovered during the observations of the work.

5.4.1 The Workflow

As a rudimentary idea workflow can be said to refer to a series of related and concatenated tasks or steps where the close pursuit of each step in a sequence leads to some specific job getting done. However, there are issues that need to be highlighted here. These issues have been previously articulated in the following way:

“There is something of a history of abstracting out and representing work activities in organizations in this fashion in order to facilitate easier analysis and refinement of different kinds of work processes (Crabtree et al, 2001). One can find it in Taylor’s notions of scientific management (Taylor, 2003) and in domestic environments you can find a similar kind of idea in the later works of Lilian Gilbreth (cf Gilbreth, 1954). As computing technology evolved the idea was formative in the development of workflow management systems, largely informed by similar kinds of generic abstractions of the work to be accomplished and with an eye towards maximizing the scope for automation (Abbott & Sarin, 1994; Georgakopoulos et al, 1995; Mahling et al, 1995; Sheth, 1997; Sheth et al, 1996; Stohr & Zhao, 2001).

“There is not the space here to go into great detail about workflow, understandings of workflow in different disciplines, and its development in different kinds of organizational concerns. However, what should be noted here is that the tendency of workflow representations and, in particular, workflow management systems, to focus upon generic abstractions of real work, setting aside all matters of apparent local contingency, has, in turn, been the subject of important criticism.

“One of the most seminal critiques came from Bowers, Button and Sharrock (1995) as a result of a study of the print industry and the ordinary shopfloor work of running print jobs. They noted that the principal orientation of shopfloor workers was maintaining the ‘smooth flow of work’. This involved

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a variety of considerations geared towards maximizing both worker and machine occupation so that neither was standing idle, which meant continual massaging of priorities such that urgent jobs and routine jobs could be interleaved without difficulty. Bowers et al noted that, rather than processing jobs in strict order, shopfloor workers routinely assessed what would be long jobs or short jobs and how they could be most effectively interleaved. This drew upon a range of practical considerations such as the complexity of a job and the length of processes involved, the size of other jobs to be handled during the day and the amount of backlog to be dealt with, not to mention what they could most productively be doing in the way of other work whilst jobs were in the process of being printed. An important part of it all was also how workers could see and hear how their co-workers were getting along and what they were currently in the process of doing. Set against the skilled judgments being made here was a move within the company to install and use a new workflow system that was designed to improve the overall efficiency of the working process. This system was predicated upon a formal model of work which depicted print work as processes in a series such that:

“ ... (i) each process has to be terminated before another can begin, (ii) each process has just one operator associated with it at any one time, (iii) each operator can only engage in one process at any one time, and so forth.”

“What Bowers *et al* found to be the result of this externalised and formalised vision of workflow - ‘workflow from without’ as they termed it – was that it imposed an idealised order that was strongly at odds with the real world, real time management of contingency that characterized the actual doing of the print work on the shopfloor. The real doing of the work, for instance, required jobs to be got underway before they had been formally run through the system but this meant that none of the work could be recorded, current information in the system would be inaccurate, and customers could appear to be charged for work that had not been undertaken. Additionally, the workflow system was structured around interlocking processes where each one had to be completed before the next one was begun. The multi-tasking workers had been routinely undertaking in order to remain occupied and maintain the ‘smooth flow of work’, however, was impossible to capture within such a system and had to either stop or remain outside of it. Nor could workers easily stand in for one another without ‘lying’ to the system about who had done the work because each job was uniquely tied to a single operator.

“It is important to understand that this critique was in no way directed towards denying that flows of work existed or even that the formal model of the workflow was simply ‘wrong’. Rather, Bowers et al were keen to point out that what was going on was that there were two alternative views upon the workflow possible, one that was centred upon rendering an idealised model of the flow of work from without, and the other view was centred upon the practical accomplishment of the flow of work within the actual doing of it, something that necessarily drew upon a bunch of situated concerns and contingencies that could not easily be accommodated within the formal model.”

(Tolmie et al, 2013)

What needs to be remembered in that case is that, whilst any job can usually be rendered somehow in terms of a workflow, any discrete part of that workflow will always involve a great many more unspecified yet vital situated and contingent matters for it to actually be accomplished at any given moment. It is therefore important to remember the extent to which the following materials are a gloss that needs to be elaborated in detail to provide a full sense of what accomplishing the various activities outlined here really looks like in the course of doing the work. These elaborations will be developed as and where necessary within the iterative cycle and the conduct of further ethnographic work in order to support further refinement of specific requirements.

Many of the following headings can be seen to match and to provide additional detail relating to

the sections already presented in the requirements section of this document. As such they can be seen to constitute an elaboration at one further level of detail regarding those sections and to function as a resource for understanding in greater depth the sense of the requirements that have already been articulated. This in turn can serve to inform more deeply the actual constitution of the designs that are ultimately adopted.

5.4.1.1 Looking for Stories

Journalists on the news desk are each day confronted with the challenge of finding stories that are worth writing up as news articles. A certain number of stories may have been spotted previously and already been in the process of being worked up. Other stories may have been diarised for the day or have been highlighted by editorial staff as topics to focus upon. A certain number of stories released are features that may have been passed over from other language departments and translated. Nonetheless, a good part of a journalist's day working on the news desk may be devoted to trying to locate suitable stories. There are a number of different strategies they adopt to accomplish this.

A primary resource is the *news wires*. Journalists working on the news desk check the wires as an ongoing activity. They are also pretty well the first thing they look at when they first come in. Each journalist has usually configured the wires using a series of standard filters to ensure that material they receive is already potentially within scope for their overall mandate. So 'Swiss, 'Switzerland', etc. is straight away going to figure somewhere within the text. They can manually refine these filters when looking for specific things or search within the overall content using certain terms (though this usually means they already have some sense of the kind of thing they are looking for). A summary of the wire appears in a left hand column and, if they click one particular wire. The full text is displayed to the right hand side. So they will typically work through the list of recent wires clicking on ones that capture their attention and inspecting the associated text. Wires they want to bookmark to come back to later because they may have potential can have a checkmark put against them as well. When wires are seen to be particularly promising they may either print them directly or else copy the text and paste it to a document or an email. It was noted that for most of the journalists working on the news desk the wires were subjected to continual background monitoring by having the wires window open behind other windows on the desktop and by clicking to the wires to inspect the latest feeds in-between tasks. This way breaking news and important developments in stories already being scrutinised are more likely to be noticed quickly.

Other sources that can be turned to for finding stories include: NewsWhip; feedly; other news providers; government press releases; email (RSS feeds, press releases, and journal subscriptions); Twitter and Hootsuite; Facebook; blogs; Google searches; Google crowds; the local schedule of planned events; local knowledge more generally; and, of course, other people.

A final prompt for stories that is not necessarily turned to systematically but is rather generative in a relatively serendipitous fashion is people's personal acquaintances, colleagues, friends, and family. Personal contacts may be cultivated for leads and some may provide specific prompts as they happen upon them. People who are known to have some contact with a particular domain where a cue has already arisen from another kind of source may be approached to see if they can give more detail. However, all instances of this kind of work of locating stories that were witnessed were occasioned by other matters rather than standing as a feature of the routine. Contact with people of this order could happen in a wide variety of ways: through face-to-face conversation; via telephone and text message; via email; through social media such as Twitter,

Facebook and, notably, LinkedIn; and so on. The systematic organisation and work of cultivating personal contacts who might deliver leads on stories according to domain was not explored in detail. However, the deliberate use of LinkedIn to retain contact with potentially useful people when it was seen that other grounds for contact with them might disappear (for instance, because of changing jobs, or constrained periods of contact) was both reported and witnessed.

5.4.1.2 Story Selection

The following four sections look at the processes whereby stories begin to get recognised and developed as possibilities for working up into actual articles. It is in the nature of the work being outlined here that different aspects of it can be interleaved in practice and the order of the pursuit of the different parts can vary. What is being captured overall here is the work between simple monitoring and the firm commitment of putting text on the page.

5.4.1.2.1 Uncovering Potential Stories

As outlined above, the possibility of something making a good story can arise in a number of different ways. Something to note in particular here is the reasoning involved in recognising a potential story. Rationales here can include things like: whether it fits within their mandate (e.g. is there a Swiss connection? Is it outside of the excluded categories of sport, general crime, police, fire, etc.); the extent to which it's the kind of story they should be interested in as an organisation (this is not simply a matter of their explicit mandate but whether 'we really do stories like that'); whether the story is too weak or generic; whether it is something that is already being covered by Reuters/Bloomberg on the automatic feeds; the degree to which a story can be deemed 'sexy' or 'exciting'; the extent to which they've written about something similar before (and whether it can be made into a fruitful 'build' on a prior story or simply register as repetition); the timeliness of the story when it's news; the timelessness of a story when it's a feature or a podcast; the amount to which it really constitutes 'news' i.e. does it relate to some kind of change?; and so on.

5.4.1.2.2 Proposing Stories

Stories can get proposed in a number of different circumstances and be discussed with a number of different people. Typically story proposal involves situated interaction but it can happen via other mechanisms such as email or Lync. Story proposal to colleagues can generally be much more speculative than with editors to whom the very presentation of an idea can often be seen to amount to a proposal. Rationales worked up alongside of the proposal of a story tend to match the criteria outlined in the preceding section. A particularly notable forum for story proposals and the acceptance or rejection is regular morning coordination meetings that appear to happen across all departments and that are attended by both the editors and the journalists

Something to note with regard to all proposals of stories is how they are then implicative for further work. At the crudest level: proposals that are rejected implicate a return to other kinds of looking activities; proposals that are greeted with indications of how they may need to be developed to become convincing will implicate a range of work regarding the pursuit of the kinds of details that were currently seen to be lacking; proposals that are seen to be solid enough for immediate pursuit will then implicate the actual work of writing up and developing. In practice it was noted that things were more complex than this with regard to just who a story might be proposed to. A potential story proposed to an adjacent work colleague might be formulated with very little work having yet been undertaken to shape up the proposal more fully. In this kind of case work was then required to make the story into a more concrete proposal that

might then be acceptable to, say, the editor. Thus, even though accepted in outline as a ‘good idea’, much of the work of demonstrating how it might be a ‘good idea’ would remain to be done. However, it was also noted that there were very definite gradations of how a story might get formulated as a possibility to an editor. Possibilities not much better formed than those one would share with an adjacent colleague might get put forward to the editor if they happened to just be passing anyway (which has a clear economy in terms of not getting too committed if an editor is going to shoot the story down anyway). Proposals to be articulated in the morning meeting were typically prepared for with at least some of the supporting detail and evidence such that a case could be made. Strong leads on stories were sometimes seen to be taken direct to the editor as they arose rather than waiting for an opportunity to arise in some other fashion. This approach was already visibly saying something about the status of a story as a possibility because to seek the editor out is already accountable in some sense and so the strength of the story as a possibility forms part of that account. Taking some loose proposition to an editor direct would motivate questions regarding why they should be bothering them with such ‘half-baked’ ideas. It was also noted that when stories were seen to be especially strong or when, by contrast, stories were very thin on the ground, journalists would already progress to the writing up stage without necessarily seeking editorial support in order to ‘see where the story goes’.

5.4.1.2.3 Choosing Stories

There are a variety of grounds upon which different stories might get chosen for further work by journalists. Some of these are already articulated above in the section regarding uncovering potential stories. However, choices can also, additionally, be informed by things like: (on the positive side) finding the right hook or angle; seeing a particular kind of potential for a story, such as for image news or for including a video; having the presence of supporting numbers/statistics that might serve to demonstrate or contend something claimed; (and on the negative side) knowing that someone else is already working on a similar story; seeing how the story might be seen to promote something that SWI swissinfo.ch would prefer not to be associated with; there being an embargo in place (often this is not so much a case for rejection as a case for delay and, on occasion, it can even be seen as a positive feature because it means that no-one else is going to publish the story first); and there being a question about whether the story fits their mandate to explain Switzerland and its customs.

The actual mechanisms through which choices can get made include: negotiating with others in general; the morning meeting as a common venue for both proposing and selecting stories; specific editorial meetings; checking whether others are doing a story; giving/being given a story; requesting further information about a possible story; giving people supporting information; diarising potential future stories; and so on.

Overall it was clear from the observations that choosing stories is actually a complex calculus, the operation of which can be seen to form one of the central aspects of how journalistic work can be seen to unfold in practice.

5.4.1.2.4 Checking Information & Researching Stories

This can be a feature of story selection but can also figure across the remaining parts of the workflow as well – especially within the flow of writing and subbing stories where the need for verification of something can be occasioned at any point. An important element to stress here for PHEME is that the work of verification is not a one-stop shop. In fact the same story can go through numerous stages of verification by a range of different people before it is put to rest.

D8.1 Requirements gathering, use case design and interface mock-ups

There are a number of different mechanisms whereby information may get checked and stories may get further researched. These mechanisms can include: the status of wires as a source in the first place (there are certain checks that it is presumed the Swiss News Agency will already have undertaken); the conduct of Google searches; hunting out official statements; seeking advice from colleagues; getting contacts from colleagues; emailing people for information; being sent relevant stuff by email; making use of one's own prior knowledge; looking at websites and linked documents; looking at original source documents if possible; seeking out government press releases and supporting data; checking whether the story is appearing in other places; looking at SWI swissinfo.ch's own prior stories; looking at stories on other news sites; looking to see what is being said on twitter; checking the status of particular tweeters; looking to see whether there's more stuff on Hootsuite; hunting out supporting figures and statistics; phoning people; conducting interviews; and following through information routes that have already been used by others when they are reported to you.

Another element of relevance to PHEME here is the variable emphasis about the transparency of sources and how those sources are represented according to different cultures. In different countries you have to make your sources visible to different degrees and in different ways. Clearly this impacts on how a story is written as well.

There are various different kinds of circumstances in which the mechanisms associated with checking information may be brought into play, e.g.: as an outcome of an editorial discussion of the content of a feature; in the context of morning meetings; as arising within the writing process; as a consequence of subbing or translating; as a feature of editorial work, and so on.

Note also that, for some stories, it becomes important to look at the *background* behind why some situation has arisen or some position is being taken. This is especially the case where questions regarding aspects of a story are not able to be answered simply on the basis of what is currently available. For some stories it becomes particularly important to track down original documents upon which certain claims may have been based. It may also be necessary to explore websites about people and organisations that might serve to enrich a journalist's understanding of events that have just occurred.

5.4.1.3 Writing Stories

Actually writing up a story obviously goes to the heart of the enterprise. In our discussion of core practices and the work of creating digital documents above we already make mention of some of the important features here. Preparation of a document for writing up is actually quite systematic and notably stable as a method across different journalists. First of all a bunch of potentially relevant text will get pasted into a blank document and the format adapted to the preferences of the particular author. Actual text is then typically keyed in above all of this pasted-in text. Authors may also enter placeholders to be filled in subsequently after further research and may actively highlight certain features of specific interest. At this point they may well look to other resources to verify certain details as well as checking spellings, word meanings and translations. This is followed by a period of revising information on the basis of things that were checked. As the story nears completion authors become increasingly attentive to checking word lengths. Upon completion of the basic content focus settles on getting the lead right (and within the word limit). Finally they will work on titles and surtitles, with other matters such as creating infographics and sorting out matters of presentation and layout, typically coming last.

5.4.1.4 Subbing Stories

Subbing is the re-reading and revision of a story by another journalist prior to its publication. This is seen as an essential step in quality control and always results in at least a small number of changes, so no item is truly sole-authored. The need for a story to get subbed can arise in various ways, but no content is usually moved to publication before it has been reviewed by at least one other journalist. The most common way in which subbing first gets implicated is the completion of an article. It can also arise when conducting an editorial review of an article (or feature), upon the proposal of a translation, upon the completion of a translation, and upon receipt of a guest column.

A core feature of the work of subbing a story is the actual undertaking of amendments. This may involve deletion of words, sentences, or even whole sections. Parts may be highlighted and changed, spellings altered, slight changes in phrasing undertaken, changes made in paragraph placements, line spaces deleted or added in, and so on. This work may or may not be undertaken with reference to other printed materials. Often it is directly pursued on the digital text. It was also notable that each journalist had their own preferred format for having documents displayed in. Upon receipt of a document for subbing they more or less routinely would convert the document into this format by highlighting the whole thing and changing the font etc. In this regard it is important to note that the displayed format in the Word document has no necessary impact upon the displayed format on the webpage. Once the content is passed through the content management system it is displayed on the web using a pre-defined 'house style'. Something else to note here is that the assumption of a right to just dive straight in and change the text without making their changes visible was present throughout every instance of subbing observed, indicating a distinct orientation to ownership of text to that one might witness in many other domains.

5.4.1.5 Publishing Stories

The central apparatus for publishing stories is the content management system. When a new story is entered for the first time, various bits of meta-data have to be entered and then the story is copied and pasted across segment by segment into boxes provided for that purpose. After this journalists usually busy themselves with locating images to go with the story. These are then uploaded into the content management system and edited to size. After this captions are prepared and other related stories are located on Google. Links to these are then set on the content management system. Following on from this links to the stories are then posted on Twitter and Facebook.

5.4.1.6 Reviewing & Revising Stories

It was noted that publishing is not necessarily the end-point and that some stories will still get re-visited after this point. This can happen as a result of working through translations and re-subbing the materials. It can also arise in the course of the journalists' ongoing monitoring of their own site (which all of them do recurrently). Specific triggers here can be when looking at the site as a function of the time of day (there are notions of 11 o'clock stories and 5 o'clock stories and these serve as particular prompts to look at what people are putting up). It can also be a result of: specifically checking the most recently published materials (e.g. as an editor or as a newly-arrived person on the news desk); as a consequence of comments arising in meetings; as a matter of instruction (from editors or the chef de redaction); as a result of ongoing monitoring of specific stories across other sites (e.g. seeing what other news providers have published on the

same topic and noticing discrepancies that need to be checked); as a result of checking tweets and retweets; and so on. In all cases revision involves checking the story back out of the content management system and making the relevant amendments. A journalist noticing errors may on occasion do this themselves, or they may inform the original author.

5.4.2 Supporting Activities & Concerns

In this section we step beyond the workflow directly bound up with the production of content and look instead at the different kinds of surrounding activities journalists need to engage in in order to support the actual doing of the work.

The principal topics to be covered here are the undertaking of administrative tasks, the variety of ways in which journalists were observed to attend to matters of coordination and keeping people up to date with what they were working on, the organisation of the environment for the doing of the work and the impact that has upon people's awareness of one another's activities, the numerous ways in which the undertaking of the work made visible people's understanding of the organisation and its particular interests and concerns, and a range of specific issues that became visible over the course of the observations that graduate from minor irritations to concerns that can be seen to go to the heart of the changing character of journalism as an enterprise.

5.4.2.1 Doing Administrative Tasks

One of the things that is visible everywhere is the conduct of ordinary administrative work and SWI swissinfo.ch is no different in this regard. Routine administrative tasks include things like: checking email and emailing other people; keeping task lists; reporting technical issues; doing archiving; listing copyright material used; and so on. Whilst such tasks are not productive of content in their own right, they are often the glue accompanying the other ordinary aspects of everyday work and, without them, troubles may ensue.

5.4.2.2 Coordinating & Keeping Up To Date

A vital part of making an organisation like SWI swissinfo.ch work is the provision of coordination mechanisms to ensure that people work together effectively and are aware of what one another are doing. Coordination and notification were actually seen to be accomplished in a number of ways, e.g.: by making visible to others things you are currently doing (for instance as a matter of report in morning meetings); taking breaks etc. together and engaging in routine 'chat'; by preparing for and actually doing handovers between shifts; as a feature of end of day catch ups and reviews and reports; by specifically notifying one another as stories are ready, taken for subbing, etc.; by specifically seeking updates and/or providing updates (a strong feature of the monitoring work undertaken by editors); by keeping track of who's on the news desk; by using Lync etc. to keep in touch with remote colleagues; by checking the schedule; by notifying other departments about breaking news; by keeping notes of what others are doing; by recognising the relevance of what others are doing to the work of someone else and passing that on accordingly; by providing assistance upon request; by maintaining displays (there are a number of coordinate displays and management displays visible on noticeboards and whiteboards); by checking the group calendar; by specifically requesting story descriptions to circulate to other departments; by having editorial and departmental meetings; by engaging with others upon request; and so on.

5.4.2.3 Attending to Organisational Concerns

In any organisation there are ways in which attention to the organisation *as* an organisation is made manifest through the activities of those who inhabit it. Some of the situations where this was seen to be the case in SWI swissinfo.ch were: in the organised character of morning meetings; when reasoning was offered up about who should be doing what; through reminders of things to watch out for; as a result of editorial monitoring and editorial referral; with regard to the timing of stories; with regard to the actual order in which things get done; through instruction and induction; as a part of what are deemed to be ‘stories of interest’ and the exercise of rationales regarding story selection; through inviting opinion pieces; through notifications of training; by keeping planned changes in mind; by the scheduling of organisational change around external events; through the actual coverage of external events; through the exercise of central tenets such as keeping the news desk covered; through the organisation of shifts; with regard to people’s physical placement within the office space; through technical arrangements such as logging into computers or signing into phones; and, of course, through the work of marketing and monitoring of performance and the feedback mechanisms for that.

Much of the material outlined above was captured serendipitously and gleaned from the various ways in which decisions were made and accounts offered for those decisions. A further exercise here might actively probe what journalists understand to be the concerns of the organisations for which they are working and the ways in which that is an explicit part of how they reason about their work. This may in turn serve to frame what kinds of rumours are deemed to be of interest in the first place and, additionally, how journalists may seek to handle rumours in a fashion that they consider to be accountably appropriate for their particular news organisation.

5.4.2.4 Other Concerns & Issues

As a final matter, a few issues were seen to arise along the way that it would seem could render aspects of the work more problematic. These included; keeping on top of what others in the same organisation are working on/publishing (which is still an issue despite the range of coordination mechanisms put in place); their tendency to always use the same images (partly as a result of having a hopelessly over-stretched photography and graphics department); the apparent absurdity of having to do external searches to find their own material; having to rely on people remembering to post tweets and post on Facebook; the limitations of the official twitter account and issues of having personal and official twitter accounts in view at the same time; getting all of their tools to work with all the different browsers people might be using (issues were seen with Datawrapper in this regard); and having to spend as much time on story presentation as story composition. The latter issue seemed to be a regular source of journalistic complaint, and touches upon at least one aspect of what journalists may see their work to be ‘about’, i.e. the production of words, and which might therefore be seen to be in tension with the ways in which journalistic work is evolving and the growing use of a variety of resources to construct stories beyond just the words.

5.5 Conclusion

The results of the ethnographic study presented here have yielded a vast body of new insights into journalistic work, which might be used to cover a wide range of journalistic applications. For the sake of a slim and fast prototyping process, however, it makes sense to initially concentrate effort on what are considered to be the most important findings, many of which were identified in outline at least in the initial requirements gathering exercise and which are presented in section 3 above. The materials presented in this section, together with further ethnographic work undertaken throughout the prototype development process, are intended as a resource to inform the ongoing refinement and elaboration of the prototype once the initial design has been established..

First and foremost it became evident, that any application bound to succeed within a journalistic setting will need to cover more than just mere veracity assessment. A major part of the day at a news desk is spent uncovering potential stories, while journalists tend to operate within a relatively small (and thus manageable) set of core applications. Any application wanting to tap into that set of core applications should therefore allow for a quick overview over “what’s going on out there” with the possibility of filtering and sorting according to the journalist’s interests or mandate. This is also the place where PHEME can unfold its true potential since one of the biggest challenges (and time consumers) for journalists is the one of finding *suitable* stories out of an overwhelming pool of possible sources. This is also where journalists will rely heavily on a solution that adds real value to this process, for example by readily delivering information that helps in quickly assessing the trust- and newsworthiness of an emerging topic.

The second work step where a journalistic PHEME application can cover certain tasks is evidently the one of checking information and researching stories. This can be done by facilitating the mechanisms described in section 5.4.1.2.4. In particular the PHEME application should support the fact that fact-checking may well involve several steps being taken by several people. Furthermore, any information associated with a specific topic should be pulled into the system to facilitate the fact-checking. This should not only encompass information about the source of a rumour, but also associated contacts, documents, targets, governments, picture material etc. Journalists should also be able to insert their own topics or rumours to have them checked and enriched with the PHEME algorithms. This might further boost the incorporation of the application into everyday practice.

On a further note it seems pivotal for journalists to understand what has happened in the course of the development of a newsworthy story, not only to be able to assess credibility of a rumour, but also to facilitate proposing / choosing and writing a piece. A PHEME application should therefore include visualizations facilitating the understanding of rumours.

Finally, emphasis should be laid on making the application easily open to integration with existing journalistic tools. At present a primary focus for this would be Outlook or email protocols more generally. This would involve the system supporting ways of automatically sending emails about a definable set PHEME results. The provision of a more comprehensive API may well prove necessary, however, as the research develops.

6 Interface Mock-ups

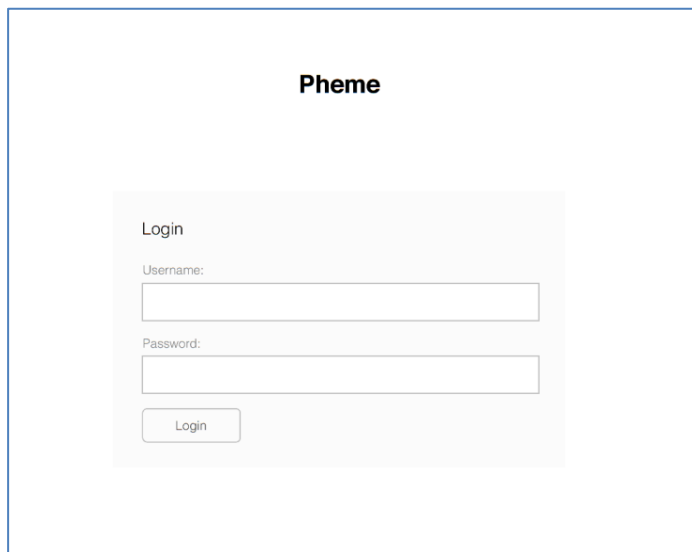


Figure 1: Login view

The design of the interface mock-ups are based on the requirements and information gathered as described in the previous sections. The interface mock-ups were developed in an iterative process, starting with the core literature-derived requirements and incorporating subsequent insights generated from the ethnographic observations. Thus the functionality of the PHEME application was projected on the two speed newsroom that is found in most modern media outlets.

It was agreed by the participants that the main focus at this stage should be on the core requirements in order to quickly achieve a working prototype and adding

additional functionality as and where possible later in the process.

This is particularly the case with the interactive visual analytics framework being developed in WP5, which will be added to the prototype when available.

The mock-ups were professionally developed by Sebastian Mitchell from iHUB and reviewed by the consortium.

D8.1 Requirements gathering, use case design and interface mock-ups

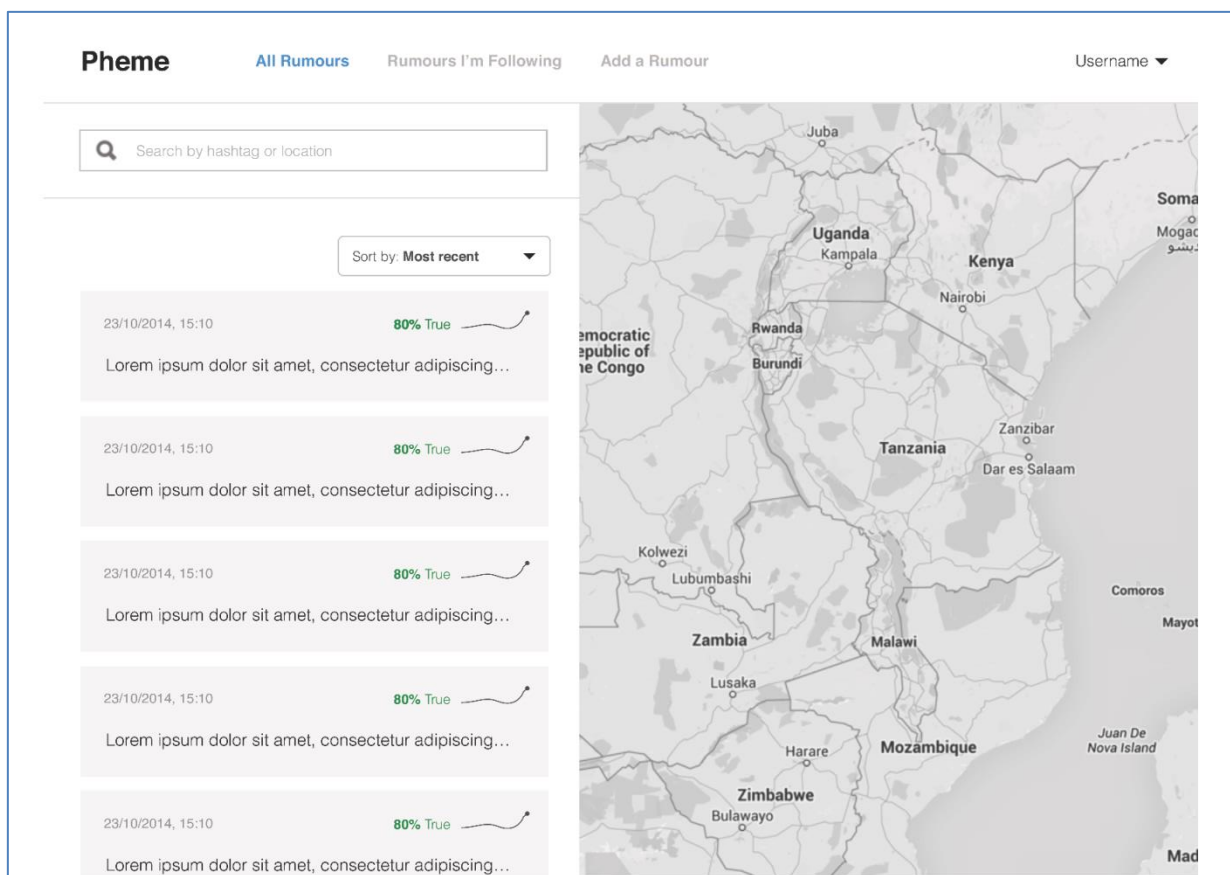


Figure 2: Rumour overview

The overview screen («All Rumours») allows the journalist to see trending information and topics at a glance. The information is meant to be updated in real-time or near real-time. To allow fast assessment of the importance or relevance of topics, a visualization of the veracity assessment of each topic is displayed as well as a related geolocalization, as was indicated in the identification of core requirements. The map displaying mentioned locations in the rumours should be interactive to allow users to explore specific areas at different levels of granularity.

Furthermore, topics and locations can be narrowed down with a search filter. This will be especially important for journalists with specific topics in mind, either through their topical preferences according to their job descriptions or, as is the case in SWI swissinfo.ch, through a specific mandate they might have to fulfil.

The overview is supposed to be scrollable to render rumours further down the list visible.

D8.1 Requirements gathering, use case design and interface mock-ups

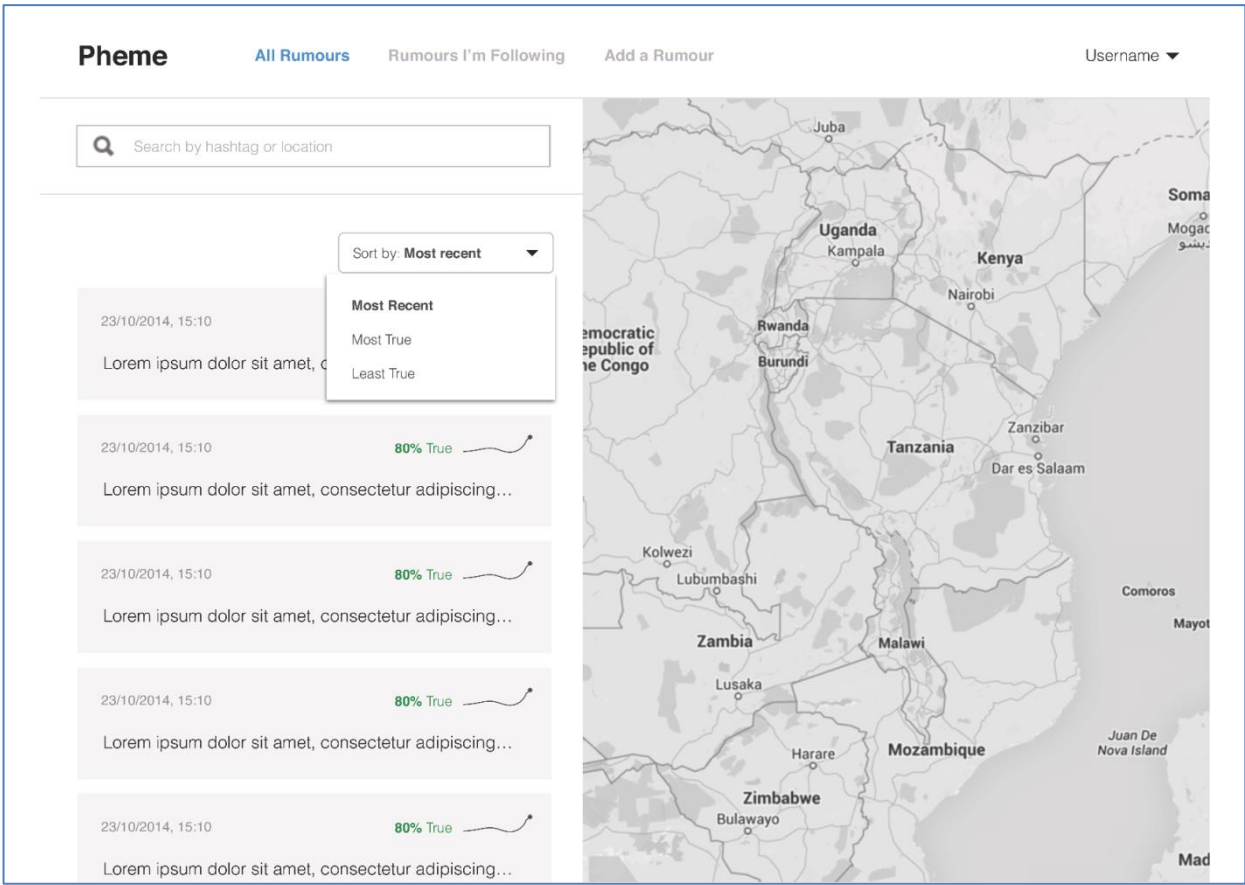


Figure 3: Sorting topics

To further support the journalistic task of uncovering stories, the topics can be sorted by most recent, high- and low veracity. This should further support the journalists on the news desk in locating suitable stories. A further sorting possibility by the number of publications, replies, reposts and retweets respectively should be considered during implementation.

D8.1 Requirements gathering, use case design and interface mock-ups

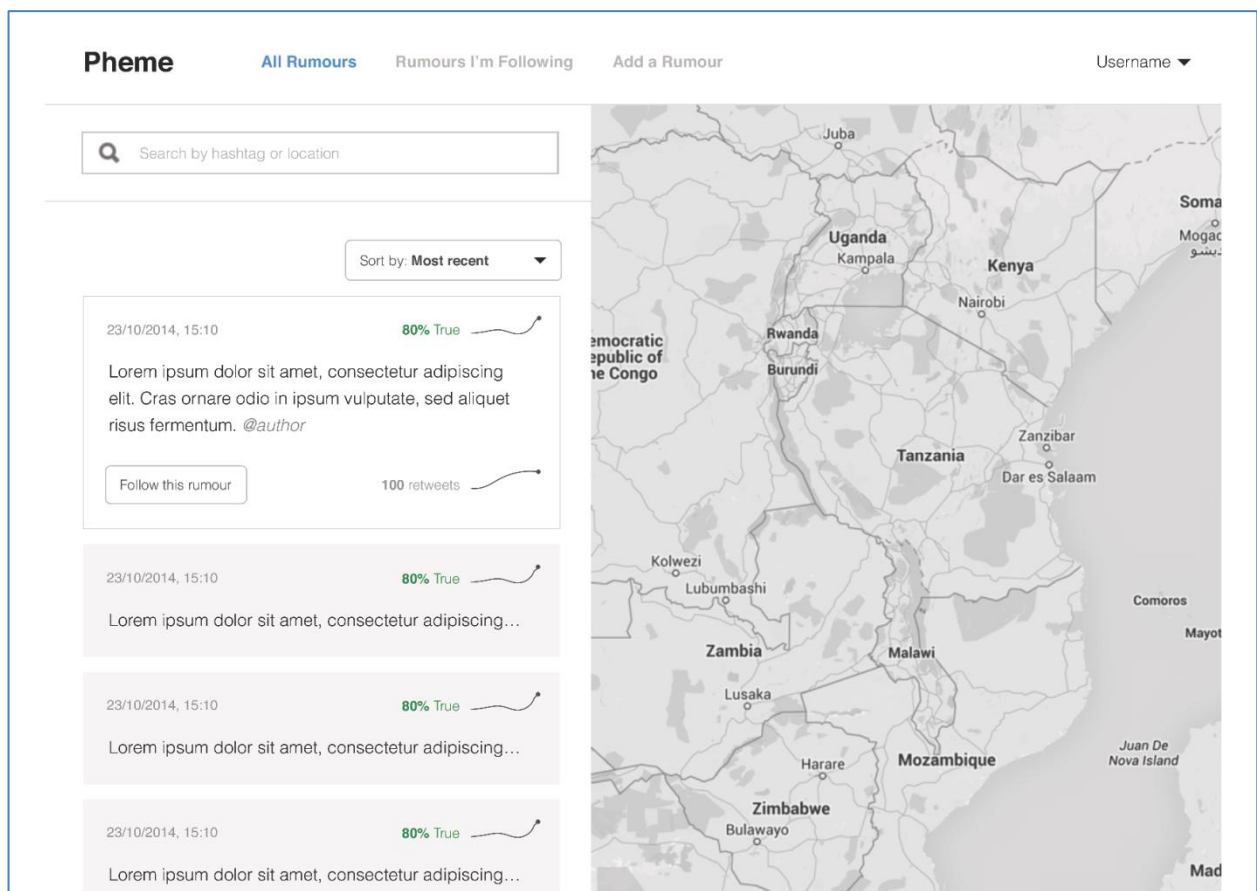


Figure 4: Quick details

As soon as a rumour is drawing a journalist's attention, a simple click will show immediately a short description of the topic.

As indicated in the above requirements, journalists need to be able to mark topics in order to come back to them later. This is conceptualized in the PHEME mock-ups directly on the overview screen, where a journalist can «follow» an interesting rumour. He can come back to these rumours of interest anytime later on.

Furthermore, the visualization of the size of a rumour (e.g. number of tweets around a topic), might help a journalist to decide whether a rumour is worth following or not in the first place.

D8.1 Requirements gathering, use case design and interface mock-ups

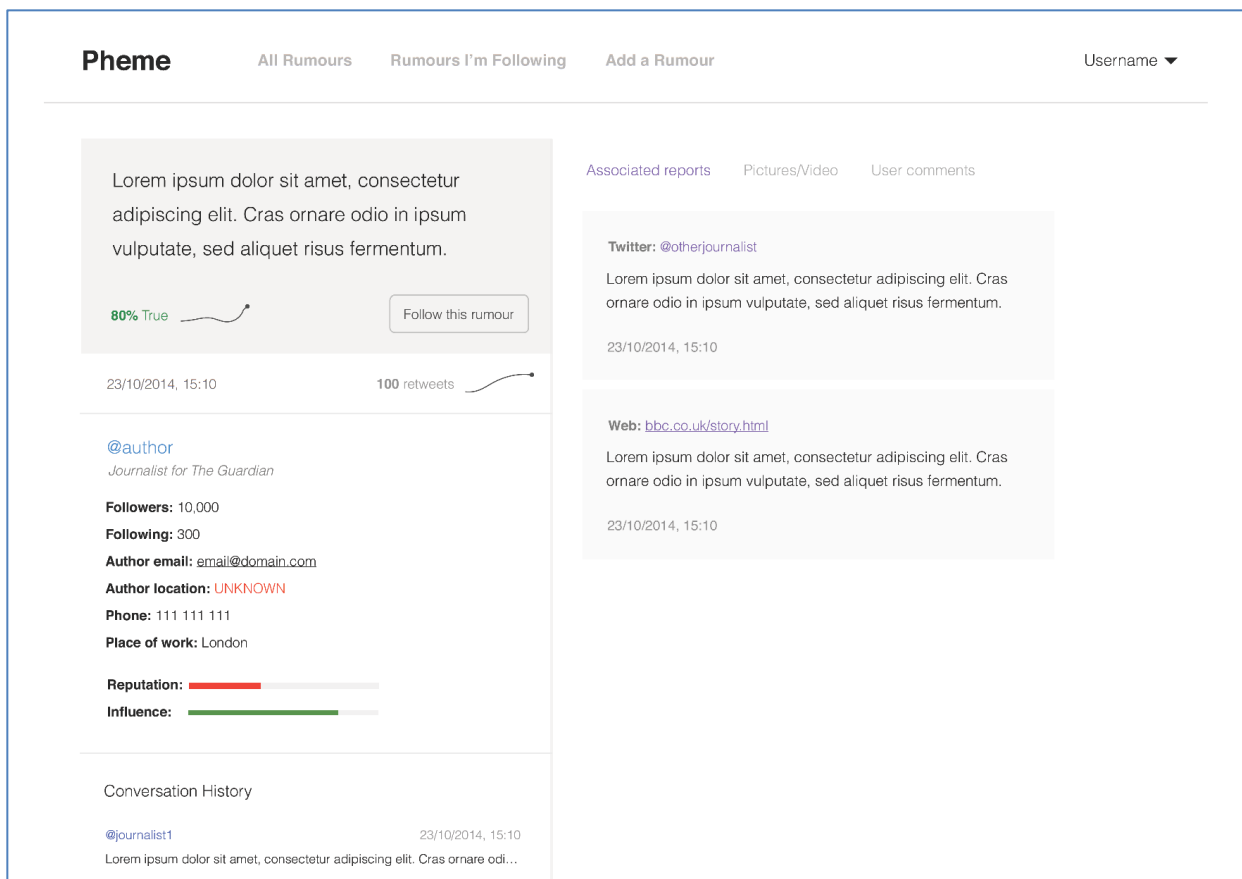


Figure 5: Rumour detail view with associated reports

In the detail or «in-depth » view, the mock-ups were conceptualized to deliver the journalist all the relevant information in an as simple a manner as possible. As indicated by the requirements, he will receive all available clues to assist verification, such as the author / source of the rumour. As was further indicated within the ethnographic observations, this includes possible account / source information (age, contact and location of the account / source, reputation and available

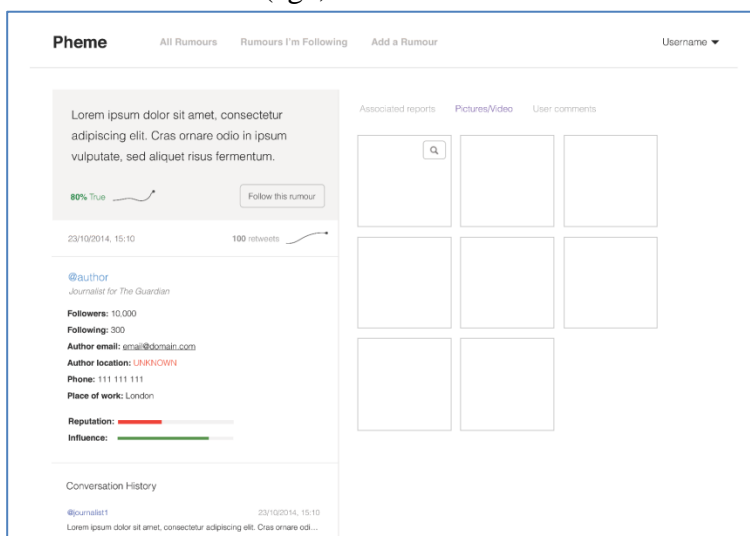


Figure 6: View of multimedia items associated with a rumour

history). However, associated reports, documents and multimedia material should also be readily available to enable cross checking of claims.

Information on already checked sources should be stored for future use (e.g. reputation, trustworthiness, etc.).

D8.1 Requirements gathering, use case design and interface mock-ups

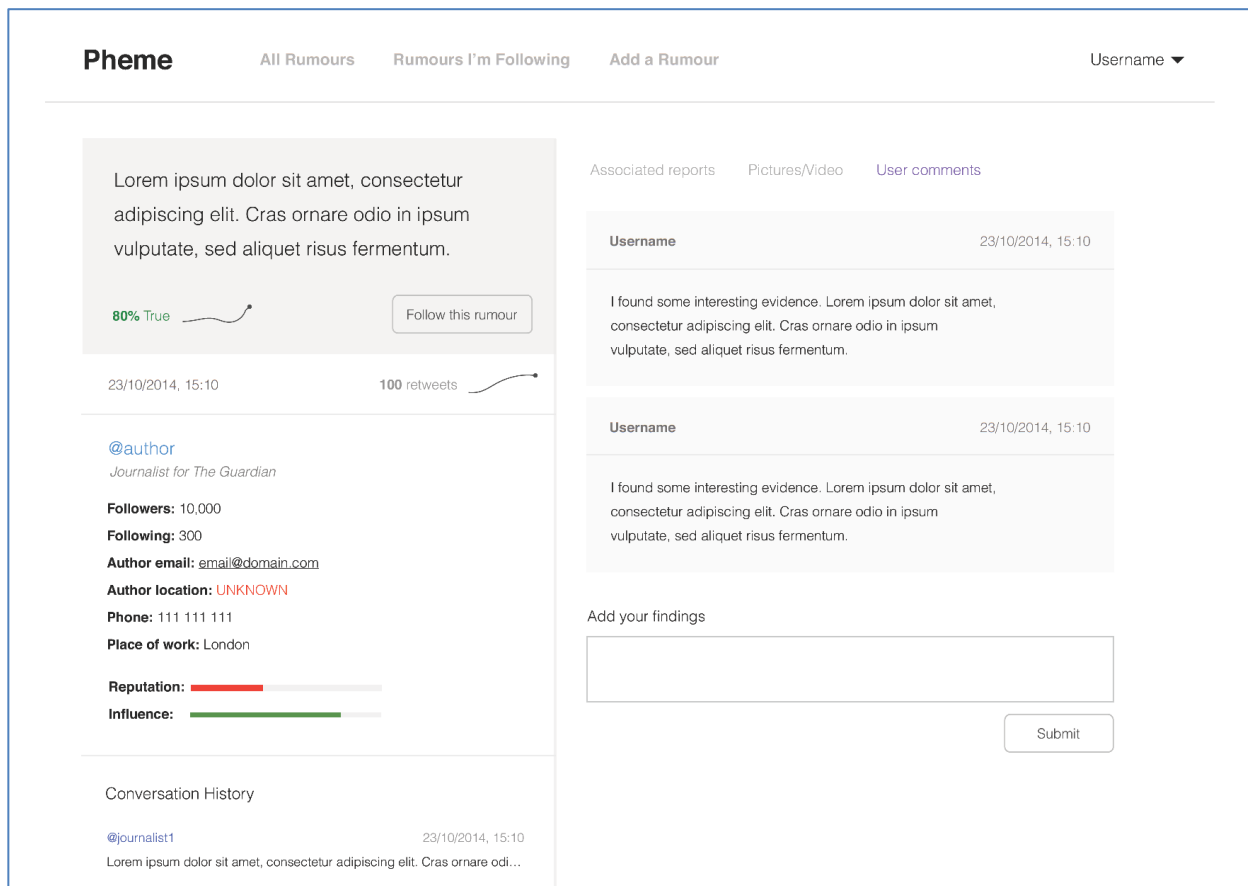
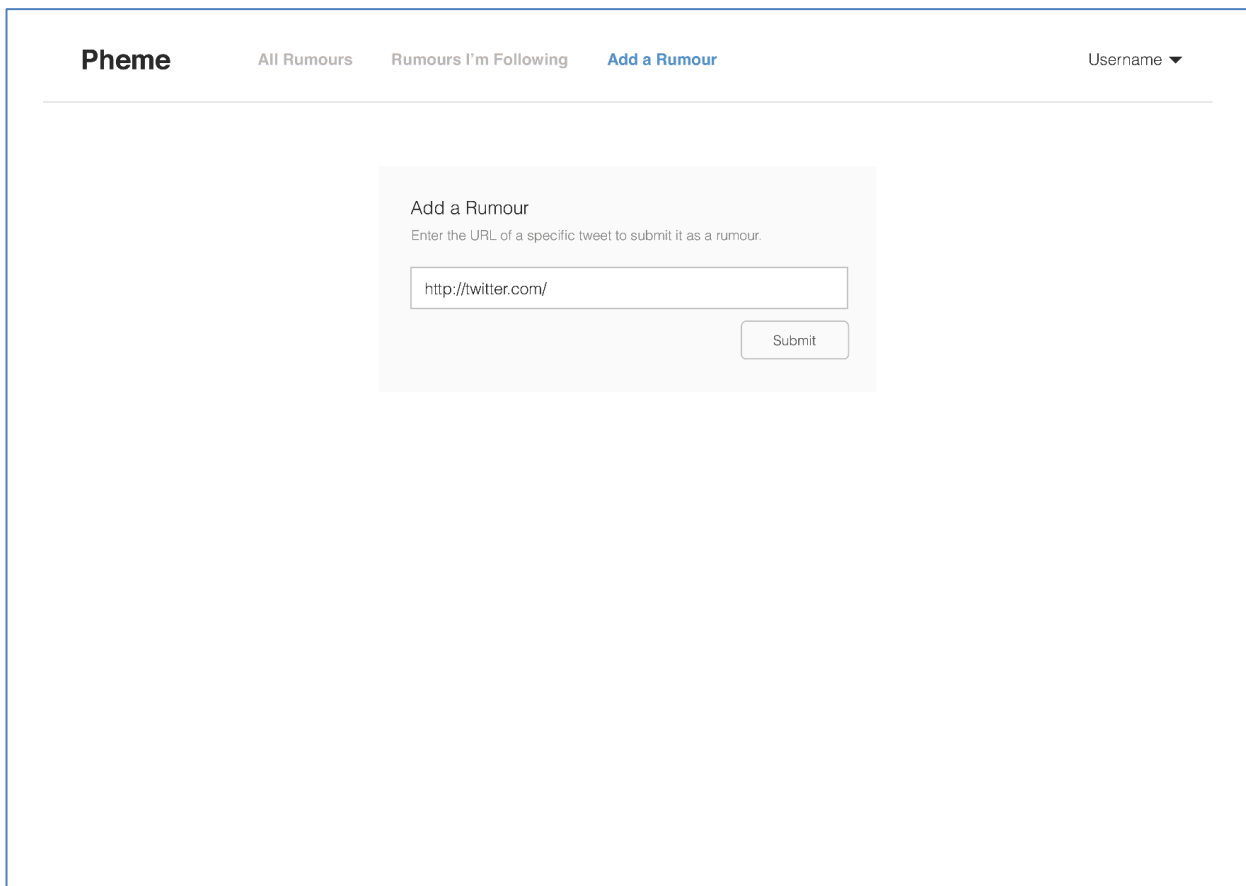


Figure 7: Collaboration functionality

One of the more salient requirements found in the literature as well as in the ethnographic observations was the emphatic need for a collaboration component in a journalistic tool. Very often rumours span over several days or even weeks and are treated by more than one person. This fact is considered in the mock-ups with a comment section, allowing the journalists to store information and findings directly associated with a rumour so that they are open to inspection by other journalists as well.

D8.1 Requirements gathering, use case design and interface mock-ups



The screenshot shows a web application interface for 'PHEME'. At the top, there is a navigation bar with the following elements: the word 'PHEME' in bold, followed by three menu items: 'All Rumours', 'Rumours I'm Following', and 'Add a Rumour' (which is highlighted in blue). On the far right of the navigation bar is a 'Username' dropdown menu with a downward arrow. Below the navigation bar is a horizontal line. In the center of the page, there is a light gray rectangular box containing the following content: the heading 'Add a Rumour', the instruction 'Enter the URL of a specific tweet to submit it as a rumour.', a text input field containing the URL 'http://twitter.com/', and a 'Submit' button.

Figure 8: Adding rumours

During the requirements gathering, it also became clear that journalists might uncover certain rumours before they become available to a wider audience. The tool should therefore allow journalists to track their own particular topics of interest as they arise.

D8.1 Requirements gathering, use case design and interface mock-ups

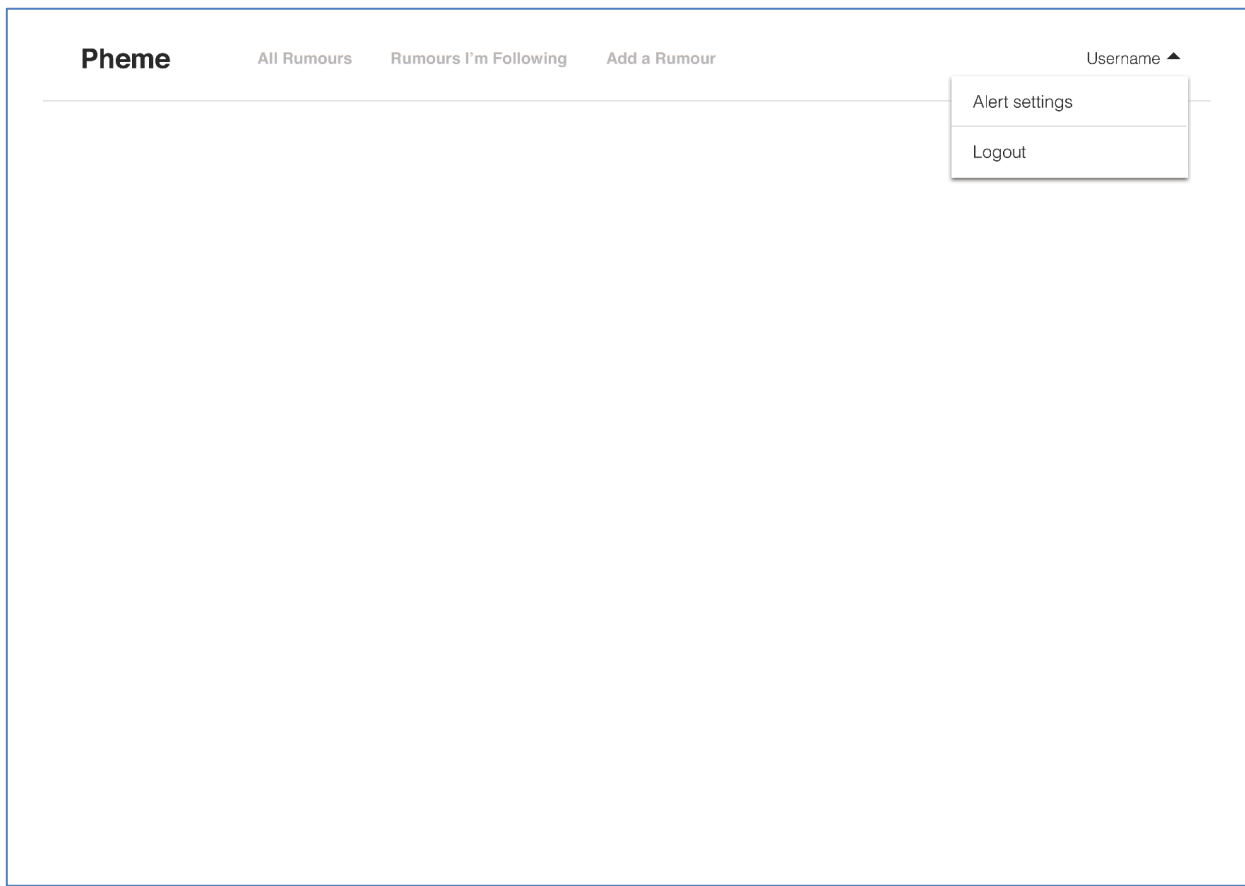


Figure 9: Alerts

One of the more important features enabling the preservation of existing work practices will be the possibility to set alerts for specific topics or circumstances (e.g. a rumour hitting a certain number of retweets, a rumour concerning certain topics or locations etc. becoming visible). The exact scope and functionality of such an alert system will be defined in Work Package 8.3.

7 Further Tasks

Other tasks contained in WP8 include a journalism corpus collection and annotation and the development of an open source digital journalism use case (main responsibility iHUB, month 13 - 36) and the iterative evaluation (SWI, month 20 - 36).

7.1.1 Task 8.2. Journalism Corpus Collection and Annotation (M1 – M18) – SWI, USAAR, WAR

The corpus collection for the journalism use case consists of rumour data sets linked to specific news stories. Breaking news events that could give rise to rumours on social media were first identified in real time, then a set of keywords and hashtags were used to collect tweets being posted in relation to the event. Tweets that garnered at least 100 re-tweets were then uploaded onto an interface for visualisation and annotation.

By the end of 2014, consortium partners had gathered rumour data sets for six separate news events. These include the unrest in Ferguson, Missouri, that followed the killing of unarmed teenager Michael Brown; a false rumour begun by a user on Twitter that the football player Michael Essien had contracted the Ebola virus; the shooting to death of a soldier in Ottawa, Canada; a false rumour that Prince would play a secret concert in Toronto, Canada; rumours that the Museum of Fine Arts in Bern, Switzerland would accept the controversial Gurlitt collection of Nazi-looted art; and the hostage crisis at the Lindt Café in Sydney, Australia.

The annotation to date has consisted of identifying specific rumours within each news event and separating them from non-rumours.

This initial rumour corpus has been shared internally within the consortium so that project partners can test their algorithms and create training data.

Furthermore, an annotation scheme has been developed to annotate the rumourous stories that have been identified into more detailed classifications. Future work will also include linking the data to various entities (organisations, geolocation), other types of social media and news reports.

A complete rumour corpus incorporating this additional annotation work and analysis will be ready at M18 for partners to further test requirements, prototype designs and algorithms.

7.1.2 Task 8.3. Open-Source Digital Journalism Showcase (M13 - M36) - iHUB, ATOS, ONTO

T8.3 will encompass the development of the PHEME journalism application. The development of the prototype will be an extension of iHUB's existing CurrentEngine platform. A working implementation of the platform can be found under <http://www.crisis.net>. Similar to CrisisNet, the PHEME application will be able to run in a browser and tap into the PHEME infrastructure provided by ATOS and ONTOTEXT.

Any additional ethnographic work or insight into journalism requirements (including the introduction of advanced news monitoring tools at SWI swissinfo.ch) will be fed to project partners to ensure compatibility of the prototype with the most current journalism workflows.

7.1.3 Task 8.4: Iterative Evaluation (M20-M36) – SWI, ONTO

As soon as a working prototype is available SWI and UWAR will start to evaluate its result. This will not only encompass usability and functionality of the software, but also evaluate the accuracy of the annotations / veracity assessment algorithms.

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